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7 Abstract

This report provides groundwater quality information necessary to evaluate candidate sites for the C-018H soil column disposal site. This facility will be permitted under Washington Administrative Code (WAC) 173-216 and will receive wastewater from the 242-A Evaporator PUREX plant condensate treatment facility. The principal objective of this study is to compile existing technical data for use in evaluating groundwater quality, flow directions and facility impacts on the three candidate sites. The completed tasks include: (1) evaluation of existing groundwater monitoring wells in the vicinity of each candidate site to determine their suitability for characterization and permitting activities, (2) evaluation of the extent of groundwater contamination and presentation of groundwater quality data in the vicinity of each candidate site, (3) estimation of the number and placement of characterization groundwater monitoring wells for each of the three candidate sites, and (4) determination of analytes of interest for these wells.

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1.0 INTRODUCTION

This report provides groundwater quality information necessary to evaluate three candidate sites for the C-018H soil column disposal site. This facility will be permitted under Washington Administrative Code (WAC) 173-216 and will receive wastewater from the 242-A Evaporator/PUREX plant condensate treatment facility. The three candidate sites for the soil column disposal facility are located in the central portion of the Hanford Site in the vicinity of the 200 Areas (Figure 1). Site 1 is located north of the 200 West Area and site 3 is located in the northeast corner of the 200 West Area. Site 2 is located northeast of the 200 East Area. The selection of sites is provided in Koegler (1990).

The principal objective of this study was to compile existing technical data (both published and unpublished) for use in evaluating groundwater quality and the impacts from various facilities on the three candidate sites. The completed tasks include: (1) evaluation of existing groundwater monitoring wells in the vicinity of each candidate site to determine their suitability for characterization and permitting activities, (2) evaluation of the extent of groundwater contamination and presentation of groundwater quality data in the vicinity of each candidate site, (3) estimation of the number and placement of additional characterization groundwater monitoring wells for each of the three candidate sites, and (4) determination of analytes of interest for these wells.

2.0 EVALUATION OF EXISTING GROUNDWATER MONITORING WELLS AND SAMPLING TECHNIQUES

The integrity of a groundwater monitoring well and the technique used to collect the water sample is important because the reliability of chemistry and water-level data obtained from a well is dependent on these factors. If proper monitoring well design and construction techniques are not employed, the data collected from the well may not be reliable or representative of the formation water. The integrity of existing groundwater monitoring wells was evaluated to determine their suitability for use in groundwater quality analyses at each candidate site. All groundwater monitoring wells located within a 2-mi radius of each candidate site were initially identified for evaluation. This list was then refined to include selected wells most useful for characterization of the groundwater quality in the vicinity of each candidate site. The selected wells were chosen based on their proximity to each of the three candidate sites and their position relative to the site and the groundwater flow direction. Groundwater wells upgradient of the candidate sites were considered the most useful for determining groundwater quality at the site because constituents can move downgradient into the site. Well selection was also based on ability to show the influence of any past or present waste disposal activities on groundwater quality. Existing Resource Conservation and Recovery Act (RCRA) wells were given preference because of the higher quality of data generally associated with these wells.

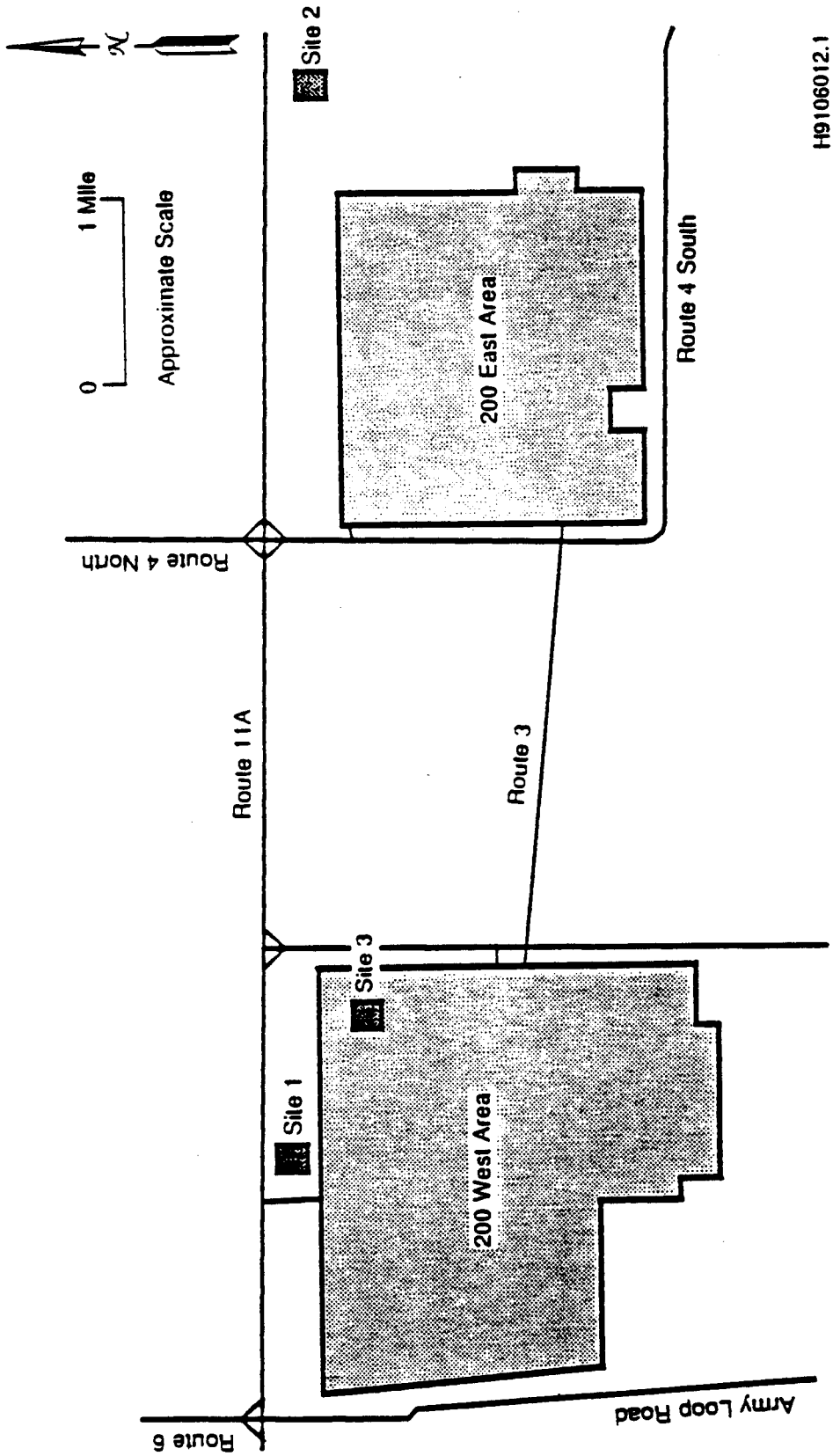

Figure 1. Location Map of the Three Candidate Sites.

Approximately 57 wells were selected from site 2 and 107 wells were selected from sites 1 and 3 for detailed investigation. Sites 1 and 3 are located approximately 6,000 ft from each other, therefore, groundwater monitoring wells relevant to each of these two sites were evaluated as one data set. The reliability of the data from these wells was then analyzed by evaluating key well construction and sampling criteria necessary to yield unbiased data representative of the formation water. These components include adequate well construction materials and installation procedures, monitoring the proper groundwater interval, and adequately purging the well prior to sampling. For a complete discussion of groundwater well design and construction, the reader is referred to published literature (NWWA 1989, EPA 1986a, and Liikala et al. 1988). A brief summary follows.

Well construction materials must be compatible with the anticipated geochemical environment. Materials should be chemically inert; and consequently nonreactive with groundwater or soils. Currently, stainless steel is used for RCRA and Comprehensive Environmental Response Compensation and Liability Act (CERCLA) wells installed at the Hanford Site, while carbon steel was used in many of the older wells. To properly complete the well in the desired sampling zone, discrete monitoring intervals must be obtained by selecting appropriate screen lengths and sealing the borehole annular space. Presently, the Hanford Site groundwater monitoring program samples the upper portions of the unconfined groundwater flow system. This is appropriate because that portion of the aquifer containing the most concentrated levels of contaminants is sampled (Eddy et al. 1978). Screen lengths of 20 ft or less are considered appropriate for wells that monitor the unconfined water table to minimize dilution. Vertical migration of water along the casing is restricted by proper emplacement of grout and/or bentonite annular seals. The addition of chemical additives commonly used in drilling must be restricted or eliminated during construction of groundwater monitoring wells. RCRA and CERCLA wells are installed using cable-tool drilling with a minimum amount of fluids added to the borehole. All equipment that may come in contact with the borehole is cleaned and decontaminated before drilling. While many of the wells on the Hanford Site may meet all or some of these criteria, only the recently installed RCRA and CERCLA groundwater monitoring wells have the records necessary to document adherence to all criteria. Previous work by Golder Associates was used in the well assessment (Golder 1989).

A wide variety of groundwater sampling devices are available to meet the requirements of a groundwater monitoring program. A discussion of these sampling methods is provided in NWWA (1989), Barcelona (1985), and Gillham (1983). The reader is referred to these for details on the correlation between sampling technique and data bias. Groundwater monitoring wells on the Hanford Site generally have been sampled by a bailer or pump. Bailed samples are not considered as reliable as pumped samples because bailed samples are often collected without proper purging of the well. Improper well purging is a serious source of bias for constituent determination in the aquifer. Therefore, these stagnant samples are less likely to be representative of true water quality within the aquifer. Samples obtained with a dedicated pump system such as the Hydrostar (a trademark of Instrumentation Northwest) or submersible pump are considered more likely to produce unbiased samples.

2.1 RESULTS OF GROUNDWATER MONITORING WELL EVALUATION

All groundwater monitoring wells identified for detailed evaluation were divided into three categories based on the criteria discussed previously. Category 1 wells are RCRA/CERCLA wells or equivalents; consequently, they are constructed of stainless steel, have a screened interval of 20 ft or less with filter pack, and have documentation of appropriate borehole completion. These wells were recently installed and most are used to sample the unconfined water table zone with a submersible pump. The wells are used for water level data and chemistry data acquisition in support of RCRA and CERCLA groundwater monitoring activities and generally represent the highest quality of groundwater chemistry data available on the Hanford Site. Category 2 wells have a known screened or perforated interval of 30 ft or less, are sampled by pump, and monitor the unconfined water table zone. The wells may or may not be constructed of stainless steel, have a filter pack, or documented borehole completion. Water-level data from these wells is representative of the water table elevation. Chemistry data from these wells is representative in most cases, but is not regulation quality due to the longer than 20-ft screened intervals, construction deficiencies, and/or lack of documentation. Category 3 wells have longer than 30-ft perforated intervals or unknown intervals, and/or have been sampled by a bailer. These wells may be used for water levels if the monitoring interval is known and appropriate. Chemistry data from these wells may be representative, but can not be proven to be unbiased and may represent groundwater quality averaged over a large vertical distance in the aquifer.

Figures 2, 3, and 4 depict the locations of all groundwater monitoring wells used in this study. The wells are keyed to the appropriate category by use of three different map symbols, corresponding to the three rankings. Tables 1 and 2 contain a summary of well construction and sampling information for candidate sites 1 and 3, and candidate site 2, respectively. The tables include the date of construction for the well, the length of the screened or perforated interval, and the sampling method used. Additional comments note if the well was constructed to RCRA standards and whether it monitors the water table or a lower or confined unit.

2.1.1 Candidate Sites 1 and 3

Candidate sites 1 and 3 are located downgradient of several waste facilities in the 200 West Area (Figure 5, Kasza et al. 1990). For this reason, groundwater monitoring wells located in the 200 West Area were critical for determining the extent of groundwater contamination that could move downgradient into sites 1 and 3. A total of 107 monitoring wells in and near the 200 West Area were evaluated. Of these wells, 39 are included in category 1, 2 in category 2, and 66 in category 3. All category 1 wells are RCRA groundwater monitoring wells that monitor a specific waste facility. All other wells in and around the 200 West Area are upgradient or downgradient of sites 1 and 3. Ideally, only category 1 wells should be used to ensure unbiased data acquisition. But due to the limited number of category 1 wells, chemistry data from other wells have been used with caution. Table 1 contains the listing of all wells used for sites 1 and 3.

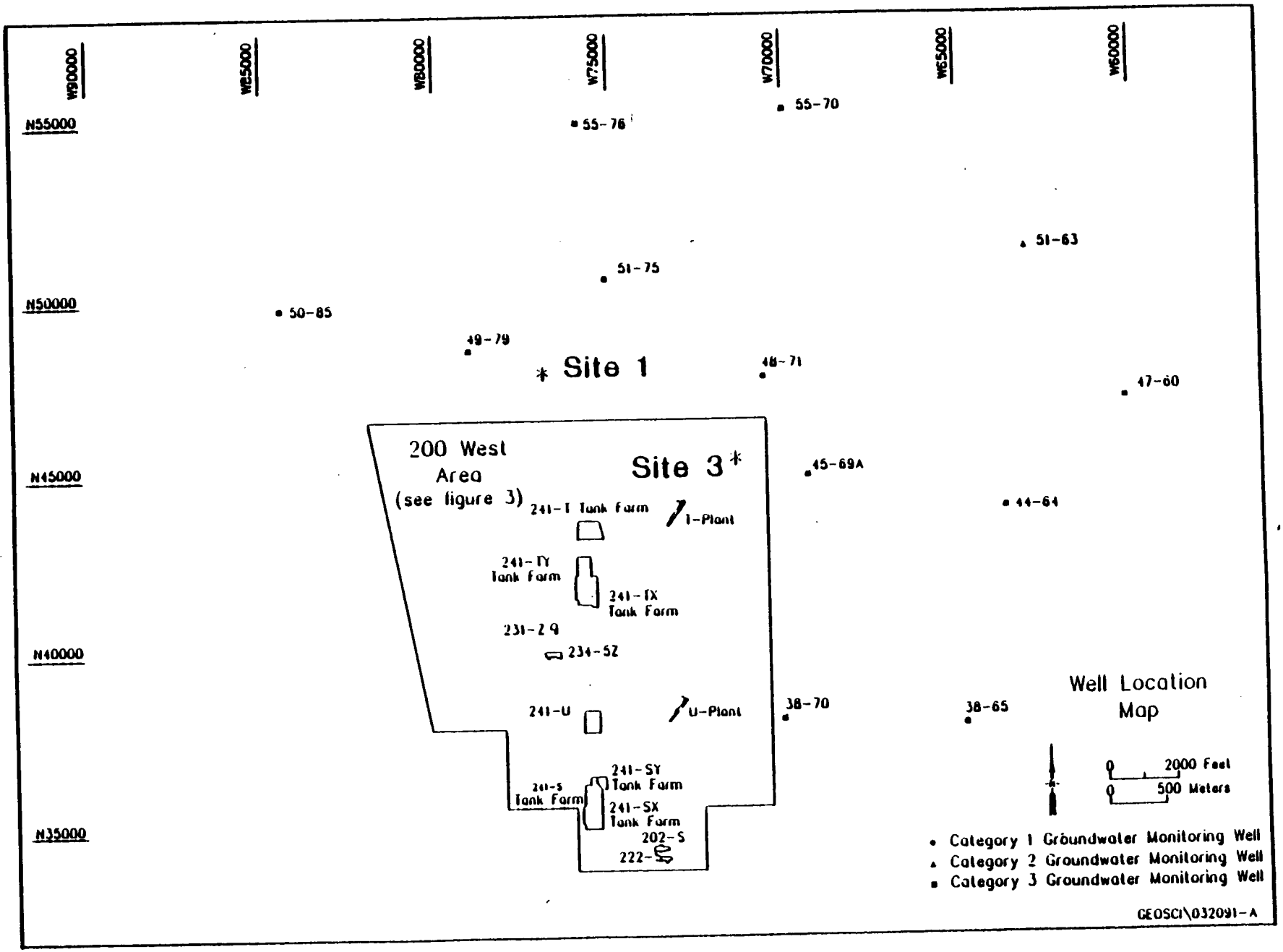

Figure 2. Well Location Base Map for Sites 1 and 3.

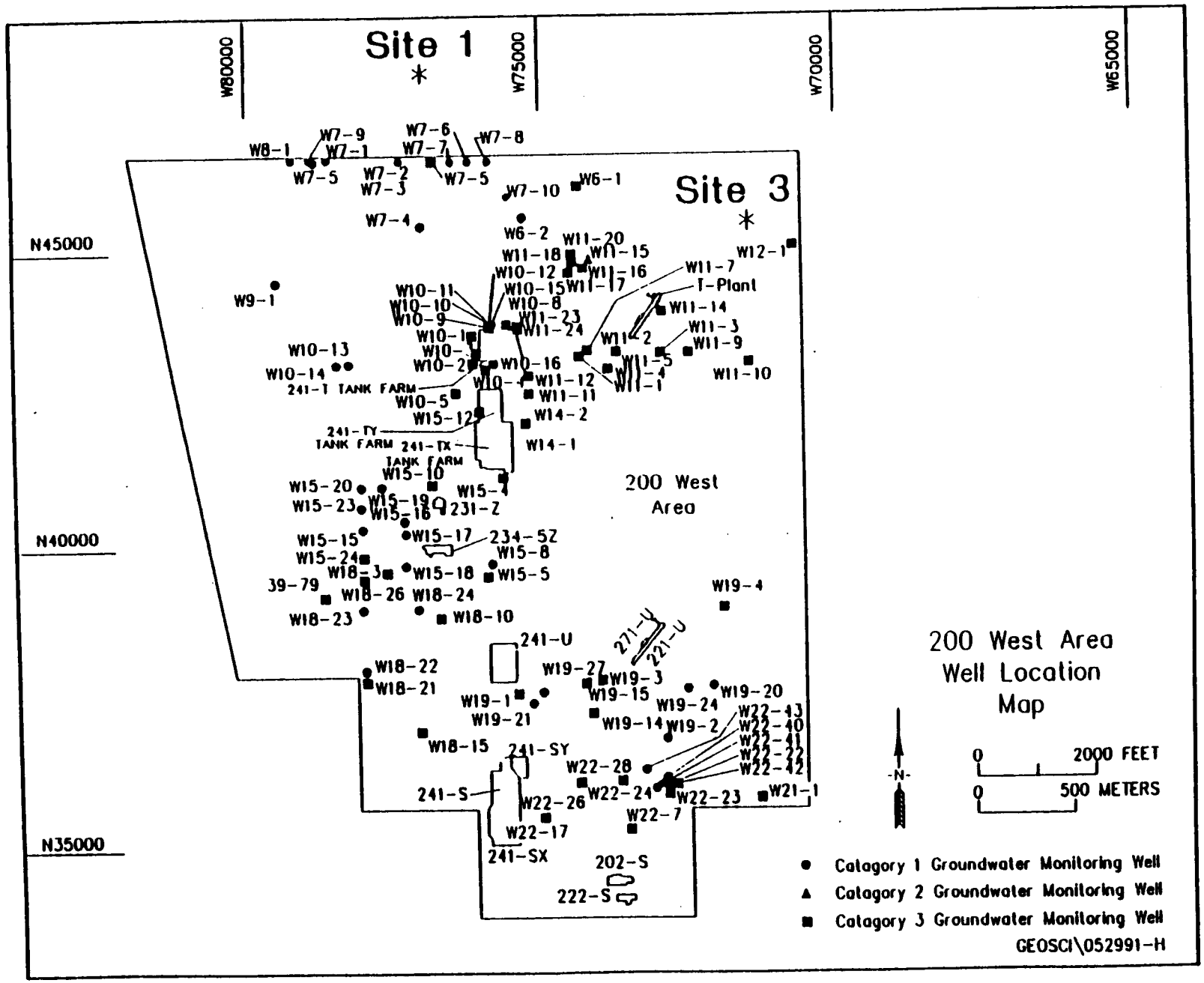

Figure 3. Well Location Base Map for the 200 West Area.

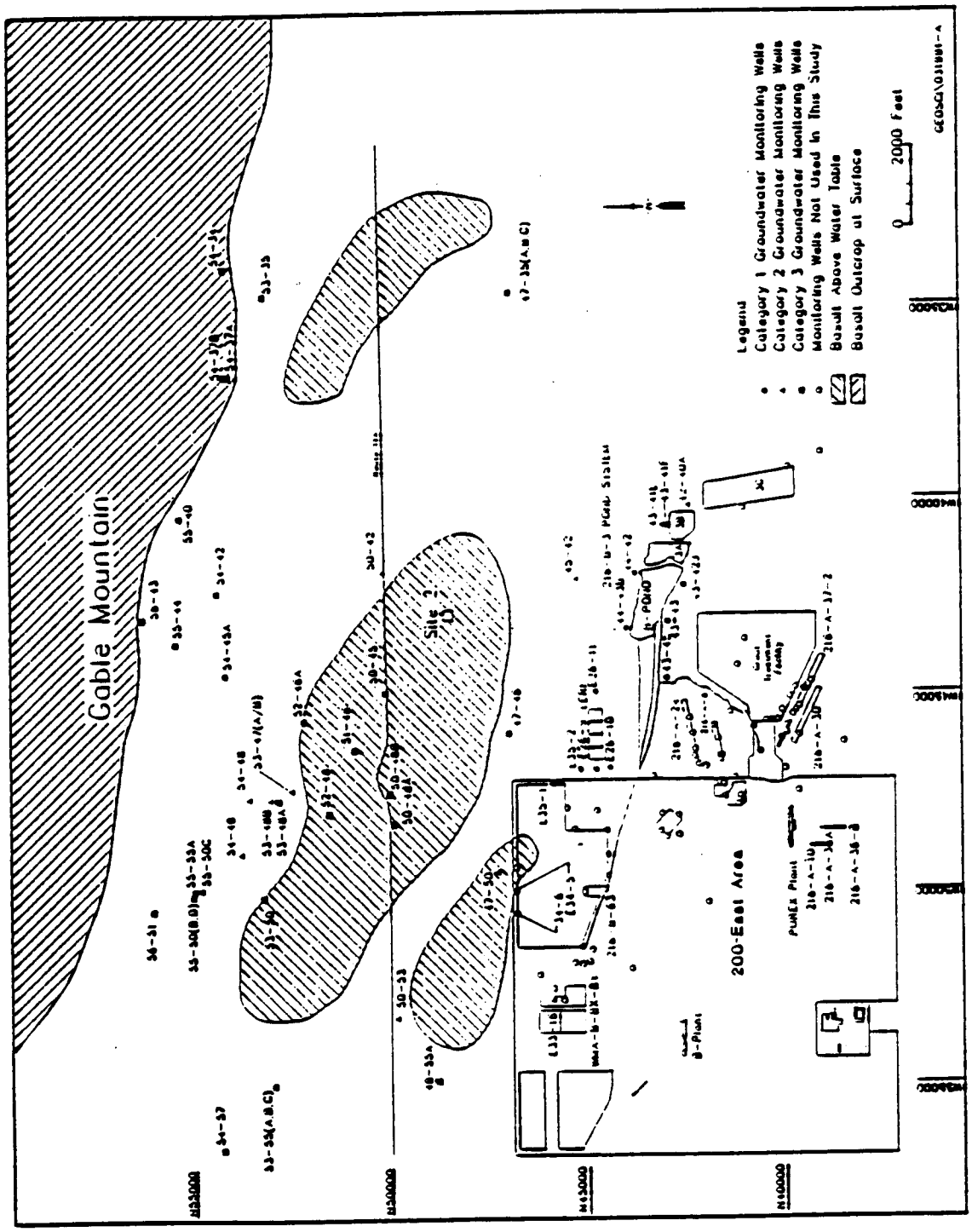

Figure 4. Well Location Base Map for Site 2.

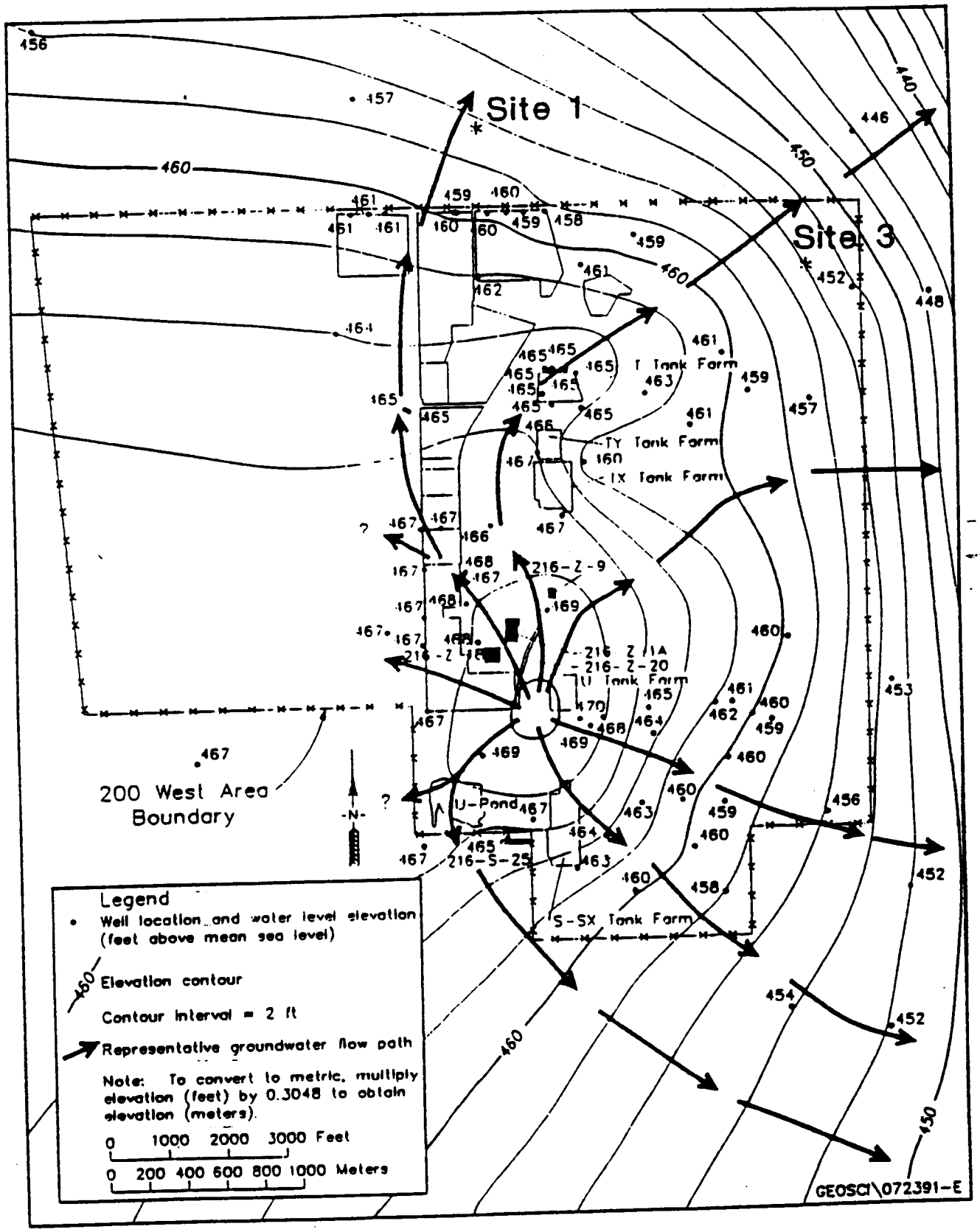

Figure 5. Water Table Elevation Map for 200 West Area.

Table 1. Groundwater Monitoring Well Categories for Sites 1 and 3. (sheet 1 of 4)

Well #	Cate-gory	Date drilled	Screened or perforated interval	Sampling method	Comments
299-W6-2	1	1987	21	Hydrostar	RCRA Water table well
299-W7-1	1	1987	20	Hydrostar	RCRA Water table well
299-W7-2	1	1987	20	Hydrostar	RCRA Water table well
299-W7-3	1	1987	21	Hydrostar	RCRA Water table well
299-W7-4	1	1987	30	Hydrostar	RCRA Water table well
299-W7-5	1	1987	20	Hydrostar	RCRA Water table well
299-W7-6	1	1987	20	Hydrostar	RCRA Water table well
299-W7-7	1	1989	21	Hydrostar	RCRA water table well
299-W7-8	1	1989	21	Hydrostar	RCRA water table well
299-W7-9	1	1990	21	Hydrostar	RCRA water table well
299-W7-10	1	1990	20	Hydrostar	RCRA water table well
299-W8-1	1	1987	20	Hydrostar	RCRA water table well
299-W9-1	1	1987	20	Hydrostar	RCRA water table well
299-W10-1	3	1947	80	Bailer	Water table well
299-W10-2	3	1951	28	Bailer	Water table well
299-W10-3	3	1951	36	Bailer	Water table well
299-W10-4	3	1952	55	Submersible	Water table well
299-W10-5	3	1954	45	Bailer	Water table well
299-W10-8	3	1973	40	Submersible	Water table well
299-W10-9	3	1973	20	Submersible	Water table well
299-W10-10	3	1974	52	Bailer	Water table well
299-W10-11	3	1974	52	Bailer	Water table well
299-W10-12	3	1974	52	Bailer	Water table well
299-W10-13	1	1987	20	Hydrostar	RCRA water table well
299-W10-14	1	1987	20	Hydrostar	193' below water table
299-W10-15	1	1989	21	Hydrostar	RCRA water table well
299-W10-16	1	1989	21	Hydrostar	RCRA water table well
299-W11-1	3	1950	91	Bailer	Water table well
299-W11-2	3	1950	258	Unknown	Water table well
299-W11-3	3	1951	66	Bailer	Water table well
299-W11-4	3	1951	50	Unknown	Water table well
299-W11-5	3	1951	55	Unknown	Water table well
299-W11-7	3	1951	45	Bailer	Water table well
299-W11-9	3	1954	22	Bailer	10' below water table

Table 1. Groundwater Monitoring Well Categories for Sites 1 and 3. (sheet 2 of 4)

Well #	Category	Date drilled	Screened or perforated interval	Sampling method	Comments
299-W11-10	3	1956	48	Unknown	Water table well
299-W11-11	3	1953	48	Submersible	Water table well
299-W11-12	3	1953	50	Bailer	Water table well
299-W11-14	3	1962	63	Bailer	Water table well
299-W11-15	2	1965	23	Submersible	Water table well
299-W11-16	3	1965	14	Bailer	100' below water table
299-W11-17	3	1967	72	Bailer	Water table well
299-W11-18	3	1967	68	Submersible	Water table well
299-W11-20	3	1969	Unknown	Bailer	Unknown
299-W11-21	3	1969	32	Unknown	Water table well
299-W11-23	3	1973	40	Submersible	Water table well
299-W11-24	3	1973	50	Submersible	Water table well
299-W12-1	3	1956	35	Bailer	1' below water table
299-W14-1	3	1954	35	Bailer	Water table well
299-W14-2	3	1955	41	Submersible	Water table well
299-W15-4	3	1956	46	Submersible	Water table well
299-W15-5	3	1957	351	Unknown	Water table well
299-W15-8	2	1966	26	Submersible	Water table well
299-W15-10	3	1968	114	Submersible	Water table well
299-W15-12	3	1973	20	Bailer	Water table well
299-W15-15	1	1987	30	Hydrostar	RCRA water table well
299-W15-16	1	1987	30	Hydrostar	RCRA water table well
299-W15-17	1	1987	10	Hydrostar	RCRA water table well
299-W15-18	1	1987	30	Hydrostar	RCRA water table well
299-W15-19	1	1989	21	Hydrostar	RCRA water table well
299-W15-20	1	1989	20	Hydrostar	RCRA water table well
299-W15-23	1	1990	20	Hydrostar	RCRA water table well
299-W15-24	1	1990	21	Hydrostar	RCRA water table well
299-W18-3	3	1959	242	Bailer	Water table well
299-W18-10	3	1968	38	Submersible	Water table well
299-W18-15	3	1980	73	Submersible	Water table well
299-W18-21	1	1987	30	Hydrostar	RCRA water table well
299-W18-22	1	1987	31	Hydrostar	RCRA water table well
299-W18-23	1	1987	31	Hydrostar	RCRA water table well

Table 1. Groundwater Monitoring Well Categories for Sites 1 and 3. (sheet 3 of 4)

Well #	Category	Date drilled	Screened or perforated interval	Sampling method	Comments
299-W18-24	1	1987	30	Hydrostar	RCRA water table well
299-W18-26	1	1990	21	Hydrostar	RCRA water table well
299-W19-1	3	1959	121	Bailer	Water table well
299-W19-2	3	1957	60	Submersible	3' below water table
299-W19-3	3	1957	50	Submersible	Water table well
299-W19-4	3	1960	280	Bailer	1' below water table
299-W19-14	3	1984	40	Submersible	Water table well
299-W19-15	3	1985	50	Submersible	Water table well
299-W19-20	1	1986	20	Submersible	RCRA water table well
299-W19-21	1	1986	25	Submersible	RCRA water table well
299-W19-24	1	1987	20	Submersible	RCRA water table well
299-W19-27	1	1987	20	Submersible	RCRA water table well
299-W19-31	1	1990	21	Hydrostar	RCRA water table well*
299-W21-1	3	1957	70	Bailer	Water table map
299-W22-7	3	1956	85	Bailer	Water table map
299-W22-17	3	1956	51	Unknown	3' below water table
299-W22-22	3	1960	75	Submersible	Water table well
299-W22-23	3	1960	100	Bailer	Water table well
299-W22-24	3	1960	340	Unknown	Water table well
299-W22-26	3	1963	98	Submersible	Water table well
299-W22-28	3	1964	82	Bailer	Water table well
299-W22-40	1	1990	20	Hydrostar	RCRA water table well*
299-W22-41	1	1990	21	Hydrostar	RCRA water table well*
299-W22-42	1	1990	20	Hydrostar	RCRA water table well*
299-W22-43	1	1990	20	Hydrostar	RCRA water table well*
699-38-65	3	1959	300	Submersible	Water table well
699-38-70	3	1957	125	Submersible	Water table well
699-39-79	3	1948	100	Submersible	Water table well
699-44-64	3	1960	126	Submersible	Water table well
699-45-69A	3	1948	92	Submersible	Water table well
699-47-60	3	1948	42	Submersible	Water table well
699-48-71	3	1956	63	Submersible	Water table well
699-49-79	3	1948	40	Submersible	Water table well
699-50-85	3	1957	260	Submersible	Water table well

Table 1. Groundwater Monitoring Well Categories for Sites 1 and 3. (sheet 4 of 4)

Well #	Category	Date drilled	Screened or perforated interval	Sampling method	Comments
699-51-63	2	1956	26	Submersible	Water table well
699-51-75	3	1957	180	Submersible	Water table well
699-51-75P	3	1977	5	Unknown	180' below water table
699-55-70P	3	1977	5	Unknown	55' below water table
699-55-76	3	1959	80	Submersible	3' below water table

*No chemistry or water level data.

Table 2. Groundwater Monitoring Well Categories for Site 2. (sheet 1 of 2)

Well #	Category	Date drilled	Screened or perforated interval	Sampling method	Comments
299-E26-9	1	1990	10	Hydrostar	RCRA water table well
299-E26-10	1	1990	15	Hydrostar	RCRA water table well
299-E26-11	1	1990	5	Hydrostar	RCRA confined basalt well
299-E33-16	3	1947	15	Unknown	Water table 2' above screen
299-E34-5	1	1987	20	Hydrostar	RCRA water table well
299-E34-6	1	1987	20	Hydrostar	RCRA water table well
299-E35-1	1	when	10	Hydrostar	RCRA water table well
299-E35-2	1	1990	10	Hydrostar	RCRA water table well
699-42-40A	2	1981	32	Submersible	Water table 20' above screen
699-43-41E	1	1989	10	Hydrostar	RCRA semi-confined well
699-43-41F	1	1989	10	Hydrostar	RCRA semi-confined well
699-43-42J	1	1988	20	Hydrostar	RCRA water table well
699-43-43	1	1988	20	Hydrostar	RCRA water table well
699-43-45	1	1989	20	Hydrostar	RCRA water table well
699-44-42	1	1988	20	Hydrostar	RCRA water table well
699-44-43B	1	1989	20	Hydrostar	RCRA water table well
699-45-42	2	1948	22	Submersible	Water table well
699-47-35A	3	1955	appr 37	Submersible	Water table 5' above screen
699-47-35B	3	1975	20	Submersible	Water table 15' above screen
699-47-35C	3	1975	33	Unknown	No chem or water table data
699-47-46	3	1961	13	Pump	Completed in basalt
699-47-50	2	1980	35	Pump	Confined well
699-49-55A	3	1961	10	Bailer	Water table 1' above screen
699-49-55B	3	1982	51	Bailer	Confined well

Table 2. Groundwater Monitoring Well Categories for Site 2. (sheet 2 of 2)

Well #	Category	Date drilled	Screened or perforated interval	Sampling method	Comments
699-50-42	2	1955	11	Submersible	Water table well
699-50-45	3	1980	45	Bailer	Confined well
699-50-48A	3	1955	unknown	Unknown	Confined well (ddh-1)
699-50-48B	3	1980	unknown	Bailer	Monitored interval unknown
699-50-53	2	1955	17	Submersible	Water table well
699-51-46	3	1980	43	Bailer	Confined well
699-52-46A	3	1980	55	Bailer	Confined well
699-52-48	3	1980	50	Bailer	Confined well
699-53-35	3	1971	unknown	Bailer	Monitored interval unknown
699-53-47A	2	1966	14	Submersible	Water table well
699-53-47B	2	1984	20	Submersible	Water table well
699-53-48A	3	1984	unknown	Pump	Monitored interval unknown
699-53-48B	2	1984	20	Pump	Water table well
699-53-50	3	1980	49	Pump	Confined well
699-53-55A	3	1961	115	Unknown	Water table well
699-53-55B	3	1975	20	Unknown	Water table 60' above screen
699-53-55C	3	1975	33	Unknown	Water table 16' above screen
699-54-34	3	1971	10	Submersible	Screen position unknown
699-54-37A	3	1923	unknown	Bailer	Well caved in around screen
699-54-37B	3	1923	unknown	Unknown	Deep well in basalt
699-54-42	3	1948	100	Bailer	Water table well
699-54-45A	3	1971	10	Bailer	Water table well
699-54-48	2	1984	28	Submersible	Water table well
699-54-49	2	1984	20	Submersible	Water table well
699-54-57	3	1955	85	Bailer	Water table 9' above screen
699-55-40	3	1971	unknown	Bailer	Monitored interval unknown
699-55-44	3	1971	10	Bailer	Water table 18' above screen
699-55-50A	3	1948	60	Bailer	Water table 3' above screen
699-55-50B	3	1956	60	Unknown	Water table 3' above screen
699-55-50C	2	1956	24	Submersible	Water table well
699-55-50D	3	1956	57	Bailer	Water table well
699-56-43	3	1971	7	Bailer	Water table 1' above screen
699-56-51	3	1984	unknown	Unknown	Monitored interval unknown

2.1.2 Candidate Site 2

The groundwater monitoring wells located within a 2-mi radius of site 2 are located both in and around the 200 East Area (Figure 4). In the past 3 yr, a number of RCRA wells were installed to monitor the 200 East Area facilities, Liquid Effluent Retention Facility, and B Pond. During 1984 a group of wells were installed to monitor the groundwater around Gable Mountain Pond, a small number of wells were installed northeast of the 200 East Area in the early 1960's, and then again in the early 1970's. Of the wells evaluated, 14 are category 1 and 11 are category 2. The category 2 wells generally have greater than 20-ft screened intervals and are not constructed of stainless steel. The remaining 32 wells meet the category 3 criteria because of inappropriate screen length or position, inadequate sample collection method, and nonstainless-steel construction. Also, many wells lack documented construction details because of their age. A small group of wells was installed through the basalt subcrop near the site 2 location in early 1980. These wells fall into category 3 and are the only wells available that monitor the Rattlesnake Ridge interbed confined aquifer underlying site 2. See Table 2 for a ranking of all wells used for site 2 evaluation.

2.2 DATA QUALITY AND QUALITY ASSURANCE

Quality control and quality assurance programs for groundwater data collected from 1986 to 1988 were implemented by Pacific Northwest Laboratory (PNL) as part of their site-wide responsibility to provide analytical laboratory services. The analytical services were conducted by U.S. Testing under contract to PNL. PNL used interlaboratory comparisons, spiked samples, replicates, blanks, and blind samples to evaluate the analytical data. The procedures for groundwater sample collection, water-level measurements, and field measurements beginning in 1989 are contained in *Procedures for Groundwater Investigations* (PNL 1989a). The *Waste Stream Characterization Report* (WHC 1989a), completed as part of the liquid effluent study, contains a summary and listing of these procedures.

Beginning in 1989, Westinghouse Hanford established quality assurance requirements for the collection and analysis of RCRA groundwater data (WHC 1988 and WHC 1989b). The liquid effluent study summarizes the quality assurance and quality control programs for data collected beginning in 1989 (WHC 1990a). The following documents specify quality assurance requirements for collection and analysis of groundwater:

- RCRA Quality Assurance Project Plan that meets the requirements of QAMS-005/80, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (EPA 1983) and pertinent U.S. Department of Energy (DOE) Orders
- Activities consistent with the protocols and recommendations provided in EPA's *RCRA Groundwater Monitoring Technical Enforcement Guidance Document* (EPA 1986a)
- *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (EPA 1986b).

Additionally, quality assurance records are maintained that verify accuracy and precision of analytical data. PNL prepared the *Program Management Plan (PMP) Groundwater Sampling and Analysis Program* (PNL 1989b and PNL 1990) and *RCRA Groundwater Monitoring Projects Quality Assurance Project Plan* (PNL 1989c) to satisfy these requirements.

3.0 GROUNDWATER QUALITY

Groundwater quality at each candidate site was investigated for (1) evidence of past or present waste disposal practices related to Hanford Site activities that may have impacted groundwater quality at each site and (2) the presence of the WAC 173-200 list of constituents in groundwater at each site. Chemistry data from 1988 through 1990 was examined, with historical data reviewed for information.

Currently, groundwater monitoring at the Hanford Site is conducted under several programs including RCRA, CERCLA, and operational monitoring. Each of these programs requires analysis of a different set of constituents; consequently, available chemistry information will vary from well to well depending on which program requires the sampling. Historically, most wells were sampled for a limited number of constituents, directed primarily toward the detection of known nuclear byproducts. This list includes tritium, strontium, gross alpha, gross beta, and nitrate; but few, if any, of the WAC 173-200 organics or metals.

To investigate the effects of Hanford Site operations on groundwater at the three proposed sites, the Geosciences groundwater data base was queried to provide a list of all available chemistry data for each of the wells used in this study. This data was then reviewed to determine which constituents appear in the wells above detection limits and a site-specific list for each candidate site was selected to include all of these constituents. The constituents evaluated for sites 1 and 3 are those typically found in wastewater discharged from the 200 West Area facilities, such as U Plant and Z Plant, and are known to occur in the groundwater beneath that area. The constituents for site 2 were those associated with the 200 East Area facilities, such as PUREX, B Plant, 216-B-3 Pond, and various cribs. Information compiled in PNL's *Hanford Site Ground-Water Surveillance for 1989* (Evans et al. 1990) was also used in the development of these site-specific constituent lists. The appendix attached to this study contains two tables listing all constituents identified in wells from 1988 through 1990. Chemistry data in wells near sites 1 and 3 are listed in Table A and data for wells near site 2 are listed in Table B.

Groundwater quality at each candidate site will be illustrated through the use of contoured plume maps. Only those constituents present over large areas and analyzed for in many wells have adequate information for construction of plume maps. The plume maps were contoured by hand using a simple linear interpolation between data points by a hydrogeologist familiar with the general groundwater hydrology and geology of the area. Averaged values for all measurements taken in a well during a 1-yr period were used, unless otherwise noted. Information was not available to construct plume maps for the WAC 173-200 list of constituents other than those routinely monitored

under one of the existing programs (i.e., gross alpha, gross beta, nitrate, tritium, and strontium-90). Data from 1988 to 1990 were used for general discussion, while plume maps were constructed from a specific year's data set.

3.1 GROUNDWATER QUALITY AT CANDIDATE SITES 1 AND 3

Candidate sites 1 and 3 are located downgradient of several operational and waste facilities in the 200 West Area (Figures 5 and 6). The water table elevation contour map (Figure 5) illustrates the present day flow conditions in the 200 West Area and includes sites 1 and 3. Representative groundwater flow paths are illustrated. A groundwater mound exists in the southern portion of the 200 West Area near U Pond. This local high in the water table controls flow directions and hydraulic gradients in and around the 200 West Area. Groundwater flow moves radially outward from the mound. Sites 1 and 3 are downgradient from the mound and facilities in the 200 West Area north of this mound. Consequently, contamination from these facilities could reach either candidate site.

Since contamination from waste facilities upgradient of sites 1 and 3 could affect either or both sites, existing groundwater quality and potential contamination at sites 1 and 3 are evaluated collectively. The vicinity and concentration of various contaminant plumes relative to each candidate site are discussed. Results of the groundwater quality evaluation for each candidate site are discussed separately in Section 5.0. Thirteen constituents have been cited by Evans et al. (1990) to occur in the groundwater in the 200 West Area. This list includes gross beta, tritium, nitrate, carbon tetrachloride, cyanide, fluoride, chromium, chloroform, trichloroethylene, gross alpha, technetium-99, iodine-129, and uranium. The present study indicates that 22 constituents are present in groundwater in the vicinity of sites 1 and 3. Locations and concentrations of each of these constituents are discussed in the following sections.

Groundwater chemistry data from 107 wells within a 2-mi radius of sites 1 and 3 were evaluated. Twenty-two constituents were detected. Of these, the extent of contamination of 6 constituents was analyzed by contouring plume maps of the available chemistry data (Figures 7, 8, 9, 10, and 11). An adequate data set was unavailable to construct plume maps for the remaining constituents. The most recent adequate data set was for the 1988 sampling year; consequently, all plume maps associated with sites 1 and 3 were manually drawn using an average of all data for 1988 at each well.

3.1.1 Gross Beta

Two gross beta plumes occur in and around the 200 West Area (Figure 7). A relatively high activity plume is located near U Plant, and evidence of a lower activity plume is seen immediately upgradient of site 3. Gross beta activity above natural background in most cases is derived from uranium and technetium-99 activity. The highest gross beta levels in the 200 West Area are in wells near U Plant. The source appears to be the effluent line to the U-8 and U-12 cribs located near U Plant. Well 299-W19-24 had a gross beta activity of 3,430 pCi/L in December 1988. The highest activity of gross beta

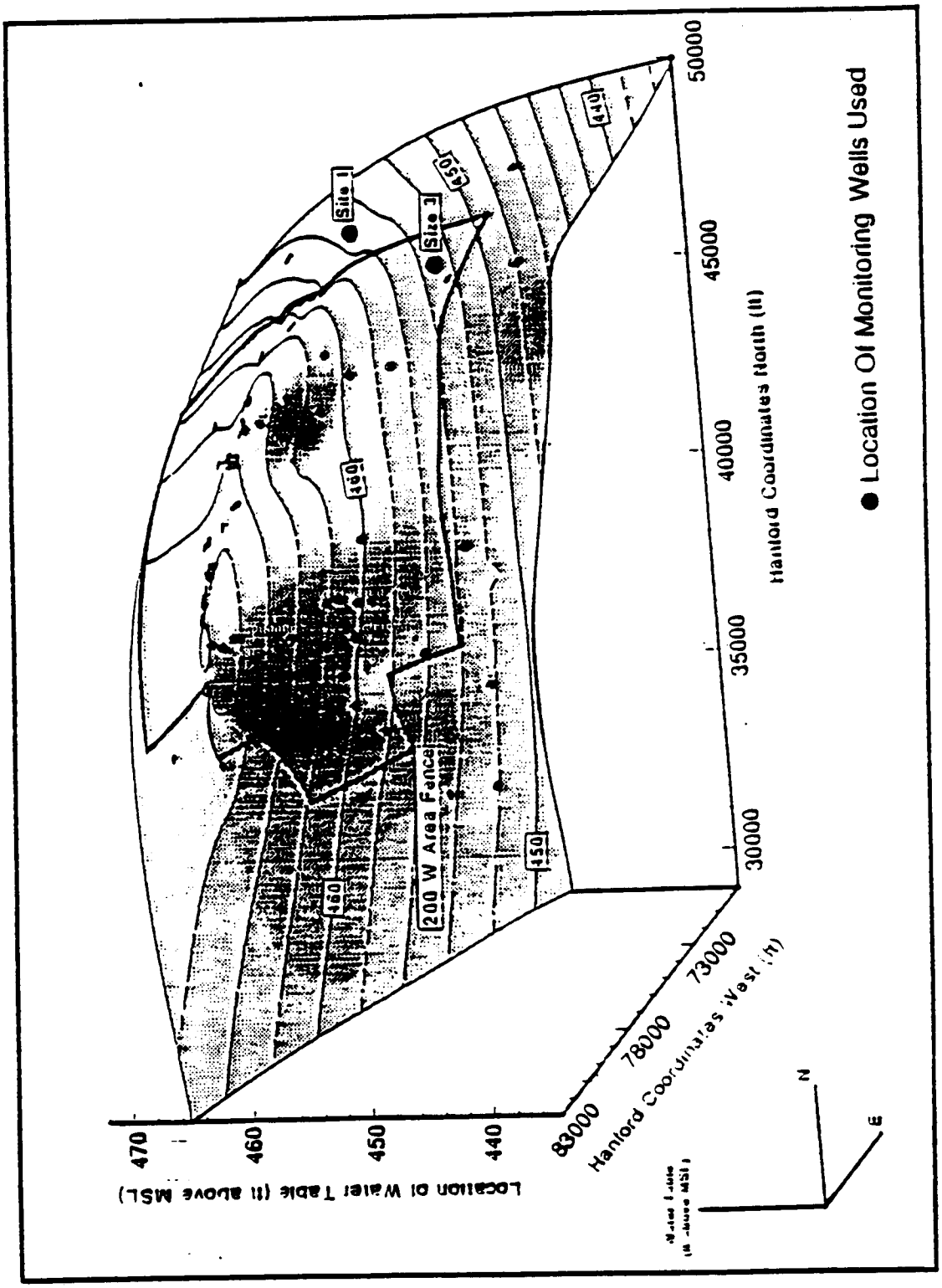

Figure 6. Perspective View of Water Table Elevations in the 200 West Area.

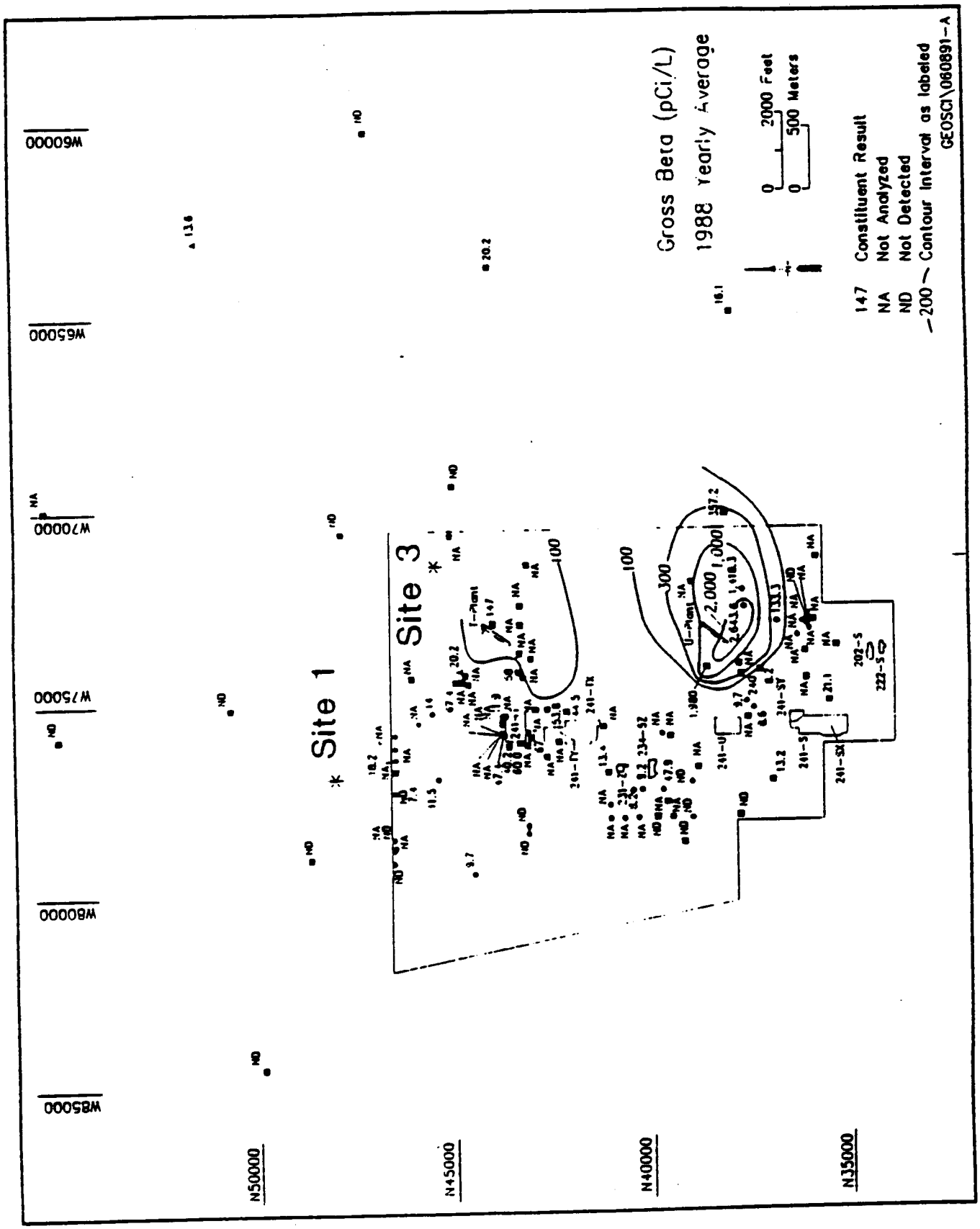

Figure 7. Gross Beta Plume Map in the Vicinity of Sites 1 and 3.

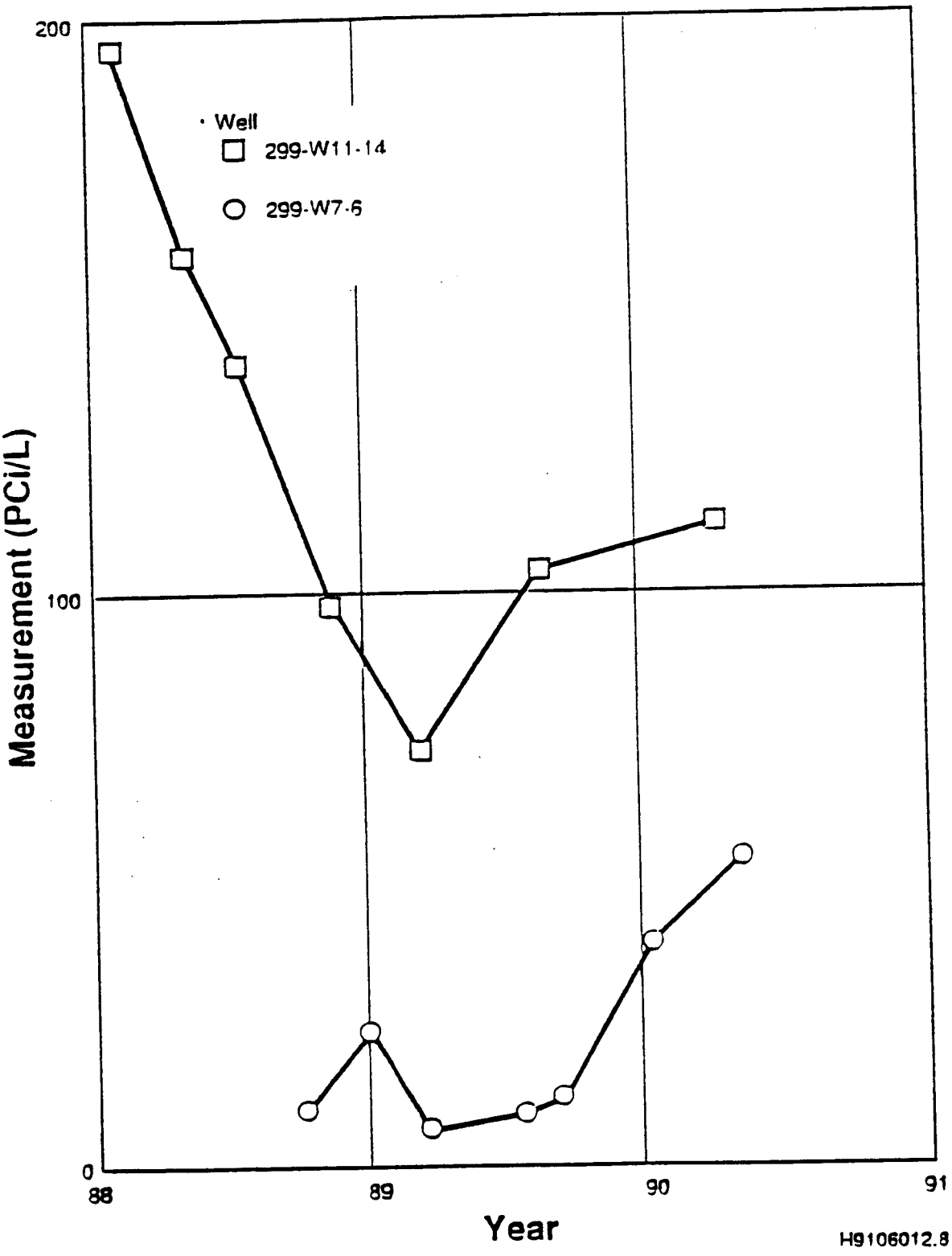

Figure 8. Gross Beta as a Function of Time for Wells 299-W7-6 and 299-W11-14.

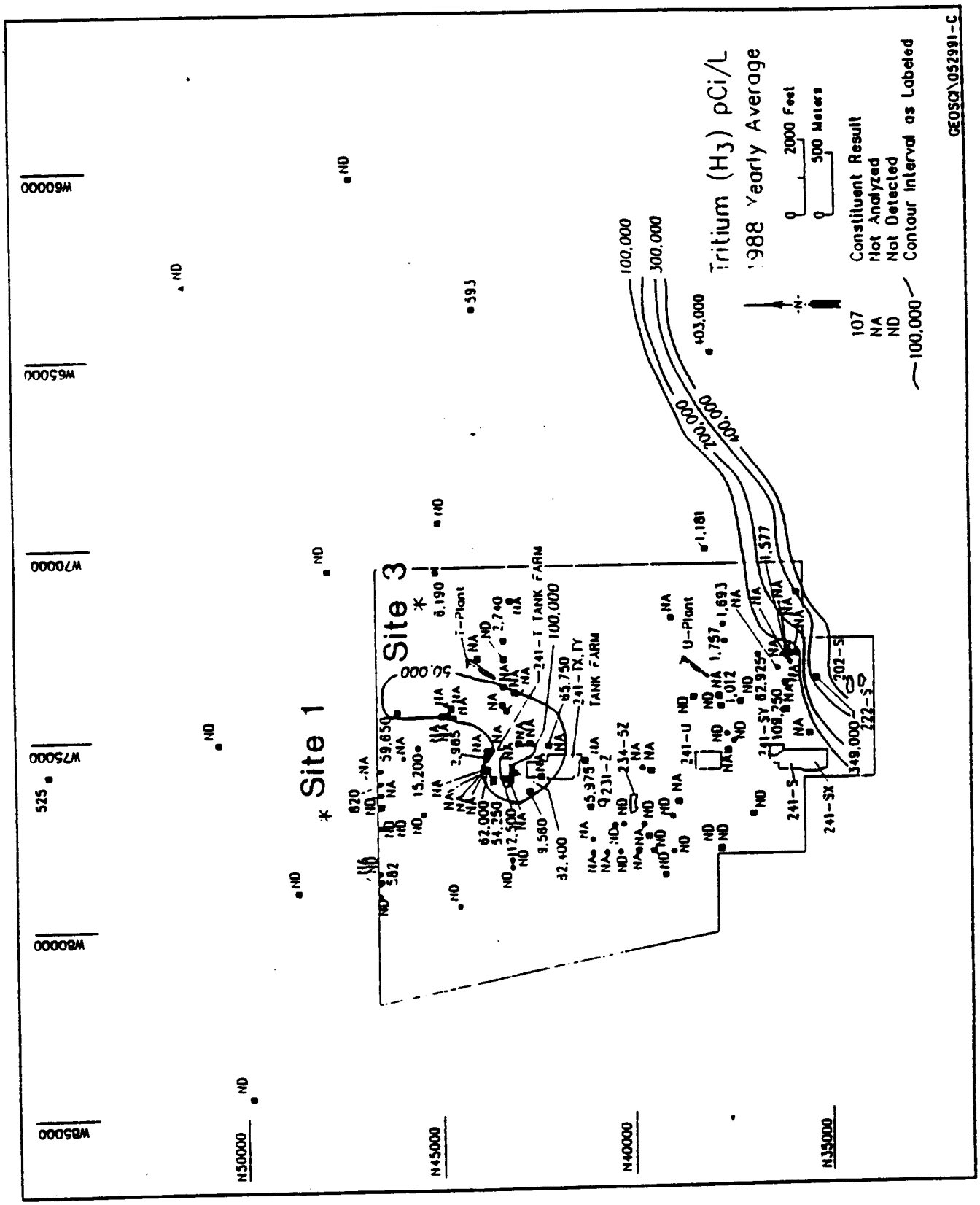

Figure 9. Tritium Plume Map in the Vicinity of Sites 1 and 3.

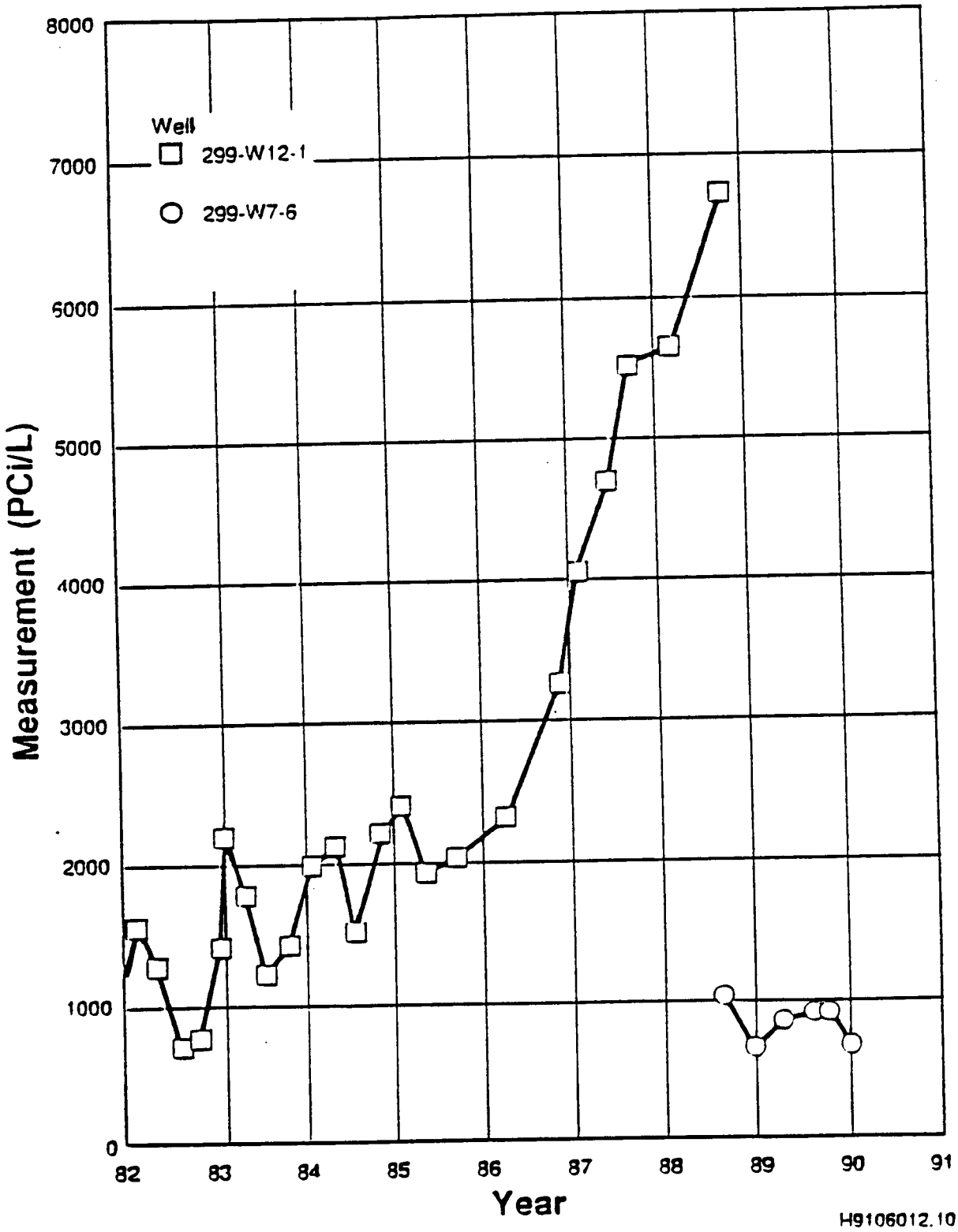

Figure 10. Tritium Concentration as a Function of Time for Wells 299-W7-6 and 299-W12-1.

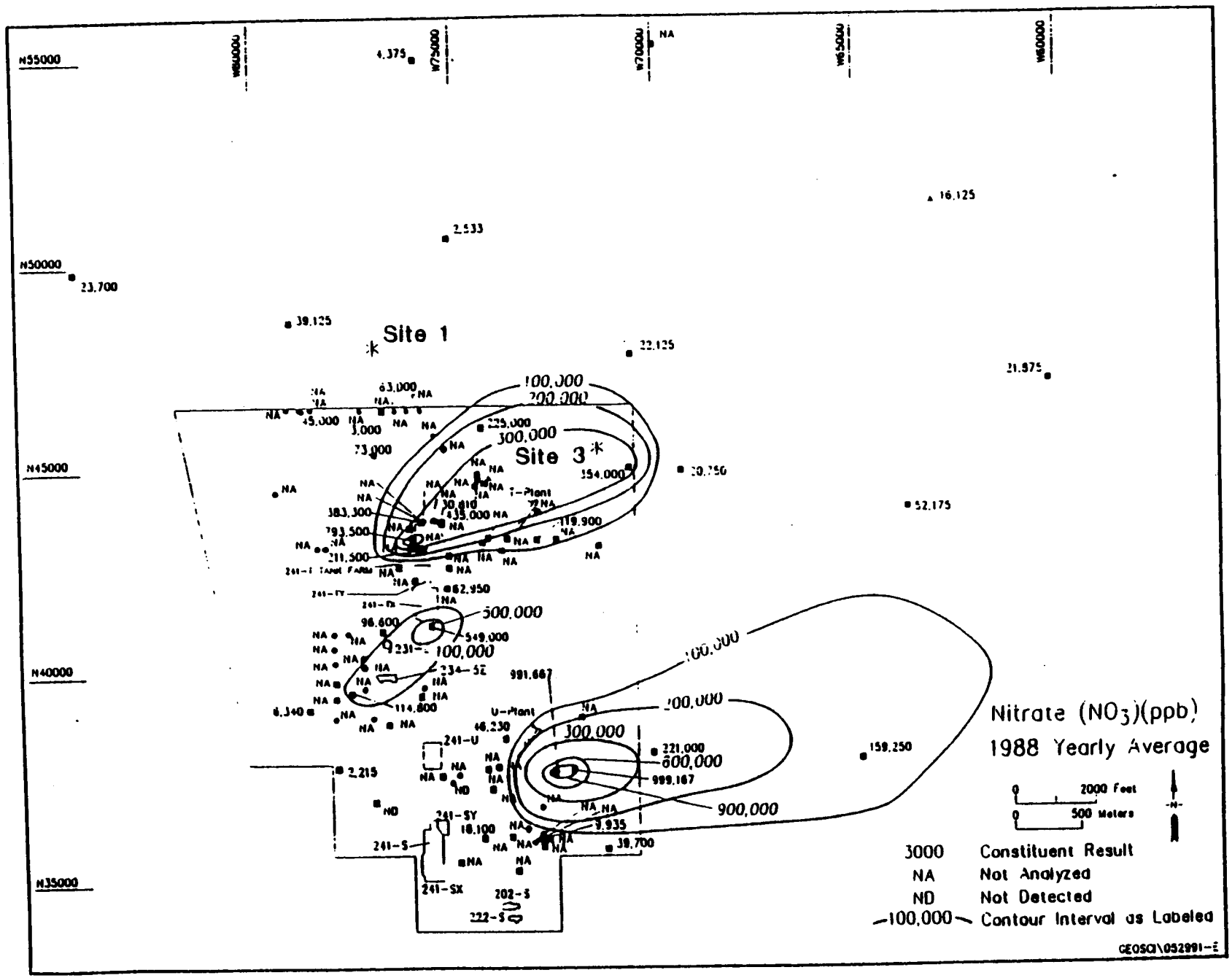

Figure 11. Nitrate Plume Map in the Vicinity of Sites 1 and 3.

immediately upgradient of site 3 was found near T Plant. Well 299-W11-14, approximately 2,000 ft upgradient of site 3, had a gross beta activity of 193 pCi/L in February 1988. The highest gross beta activity near site 1 was found in well 299-W7-6, 2,000 ft upgradient of the site with a gross beta activity of 25.2 pCi/L in December 1988. The gross beta activity in this well increased to 55.1 pCi/L in May 1990. Figure 8 shows gross beta activity measured in wells 299-W11-14 and 299-W7-6 as a function of time. An increase in activity after 1989 may indicate that gross beta in wells immediately upgradient of sites 1 and 3 is migrating into both sites. The WAC 173-200 standard for gross beta is 50 pCi/L.

3.1.2 Tritium

Two tritium plumes occur in the vicinity of the 200 West Area (Figure 9). The higher concentration plume is southeast of U Plant and extends east-southeast toward the 200 East Area and beyond. The highest concentrations associated with this plume were in well 699-38-65 with a tritium concentration of 419,000 pCi/L in November 1988. This increased to 452,000 pCi/L in November 1989. A second plume is located upgradient of sites 1 and 3 in the north-central portion of the 200 West Area. The source appears to be the 216-T cribs. The highest concentrations associated with this plume were found in well 299-W10-3 with a tritium concentration of 118,000 pCi/L in February 1988. This well is located approximately 5,000 ft upgradient from sites 1 and 3.

The highest observed tritium concentration near site 1 was in well 299-W7-6 with a concentration of 1,050 pCi/L in October 1988. The highest tritium concentration near site 3 was in well 299-W12-1 with 6,730 pCi/L in September 1988. Figure 10 shows tritium concentrations measured in wells 299-W7-6 and 299-W12-1 as a function of time. An increase in tritium concentration is observed in well 299-W12-1. Over the 1-yr period that well 299-W7-6 has been sampled, no increase in tritium concentration has been observed. Based on this data, tritium appears to be migrating downgradient into site 3. The WAC 173-200 standard for tritium is 20,000 pCi/L.

3.1.3 Nitrate

Three relatively high concentration nitrate plumes are present in and around the 200 West Area (Figure 11). The highest concentration plume is located in the southeast portion of the 200 West Area near U Plant and appears to be migrating toward the east away from sites 1 and 3. The source of this plume appears to be the effluent line to the U-8 and U-12 cribs. The highest concentration associated with this plume was in well 299-W19-20, with a concentration of 1,110,000 ppb in September 1988 and September 1989. A second nitrate plume originating upgradient of site 3 has migrated into and northeast of site 3. The source appears to be the 216-T cribs. The highest concentration of nitrate associated with this plume was in well 299-W10-3 with 926,000 ppb in February 1988. Elevated levels of nitrate are present upgradient of site 1. A third plume is located in the central portion of the 200 West Area. The source appears to be the 216-S-25 crib. Well 299-W15-4 had a concentration of 699,000 ppb in September 1988.

The highest nitrate concentrations near site 3 were found in well 299-W12-1, located 2,000 ft southeast of site 3 with 377,000 ppb nitrate in February 1988. The highest concentration of nitrate sampled near site 1 was in well 299-W7-4, located 2,500 ft upgradient from site 1 with 74,300 ppb in December 1988. The WAC 173-200 standard for nitrate is 45,000 ppb.

3.1.4 Technetium-99

Two relatively high concentration technetium-99 plumes are evident in the 200 West Area (Figure 12). The higher concentration plume is located near U Plant in the southeast corner of the 200 West Area. The source of technetium-99 associated with this plume appears to be the inactive 216-U-1 and 216-U-2 cribs or the effluent line to the U-8 and U-12 cribs. The highest concentrations of technetium-99 on the Hanford Site are in this area. Well 299-W19-24 had a concentration of 1,270,000 pCi/L in March 1988. This plume appears to be moving east and should not impact sites 1 and 3.

A second relatively low concentration plume is located upgradient of sites 1 and 3. The source of this technetium appears to be the 241-T tank farm. The highest concentrations of technetium-99 in this area were in well 299-W10-1 with 514 pCi/L in February 1988. Technetium-99 was found to be below detection limits in wells located 1,750 ft upgradient of site 1. Wells located near site 3 were not sampled for technetium-99 in 1988, 1989, or 1990. There is no WAC 173-200 standard for technetium-99.

3.1.5 Carbon Tetrachloride

The groundwater chemistry data indicates that a carbon tetrachloride plume is located in the central portion of the 200 West Area upgradient of sites 1 and 3 (Figure 13). The plume appears to have originated from the 216-Z-18 crib, 216-Z-1A tile field, and 216-Z-9 trench (Hagood and Rohay, 1991) and is migrating toward site 3. The highest concentrations associated with this plume were in well 299-W15-16, which measured 8,100 ppb in October 1988. The same well measured 8,400 ppb in April 1990. The highest concentration near site 3 was in well 299-W11-14, 2,000 ft upgradient from site 3, with 860 ppb in November 1988. Most wells located near site 1 were below the detection limit for carbon tetrachloride in 1988, 1989, and 1990. Well 299-W7-5, located 2,000 ft upgradient, had a carbon tetrachloride concentration of 43 ppb in January 1990. The WAC 173-200 standard for carbon tetrachloride is 0.3 ppb.

3.1.6 Fluoride

Groundwater chemistry data indicates that a fluoride plume is located in the central portion of the 200 West Area (Figure 14). The highest fluoride concentration associated with this plume was found in well 299-W15-4, with 12,800 ppb in March 1988. The highest concentration near site 3 was found in well 299-W11-14, with 962 ppb in June 1988. All wells located near site 1 that were sampled for fluoride in 1988 and 1989 were below the detection limit. The fluoride plume has not impacted either site at the present time, but may migrate into site 3 in the future. The WAC 173-200 standard for fluoride is 4,000 ppb.

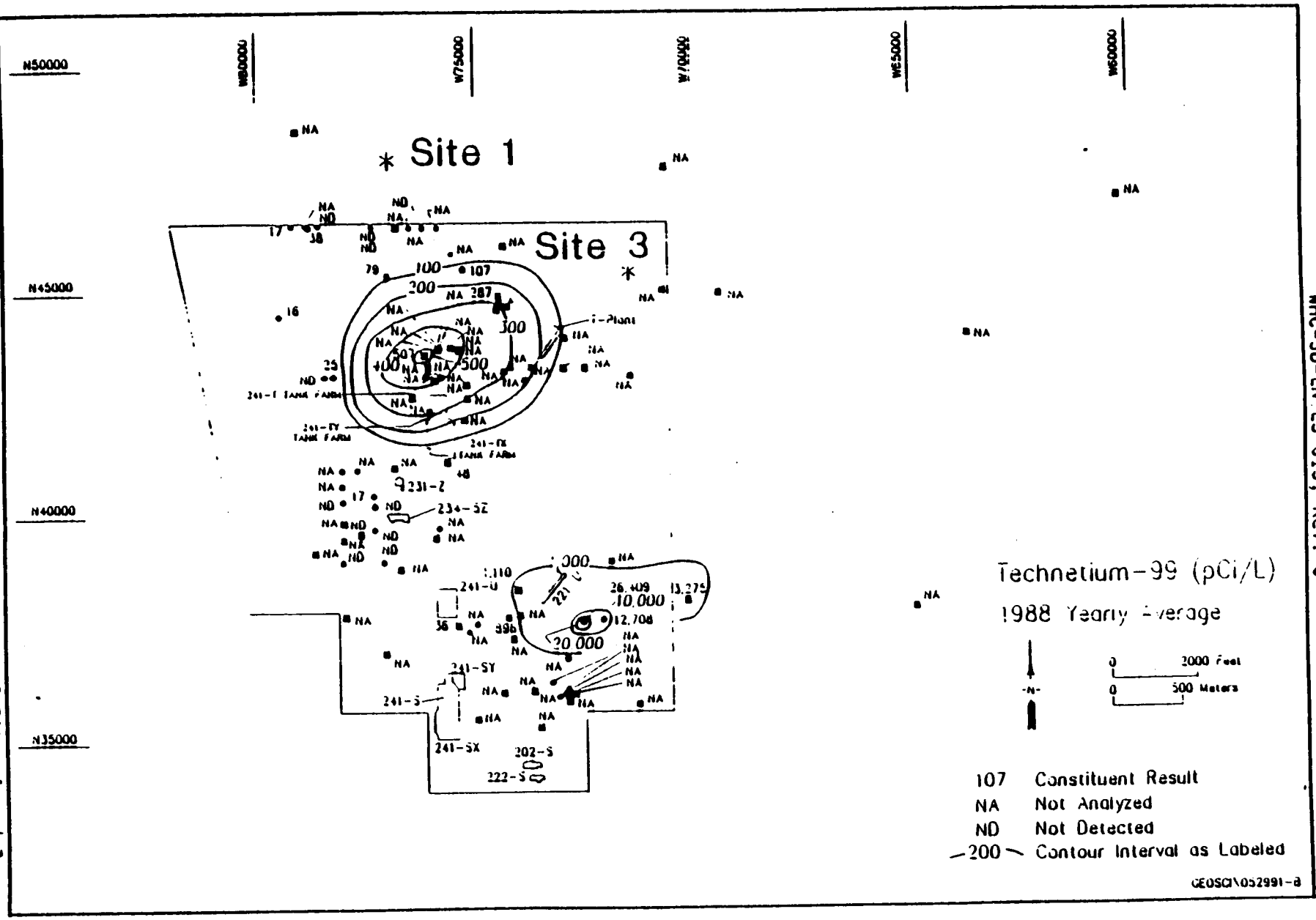

Figure 12. Technetium-99 Plume Map in the Vicinity of Sites 1 and 3.

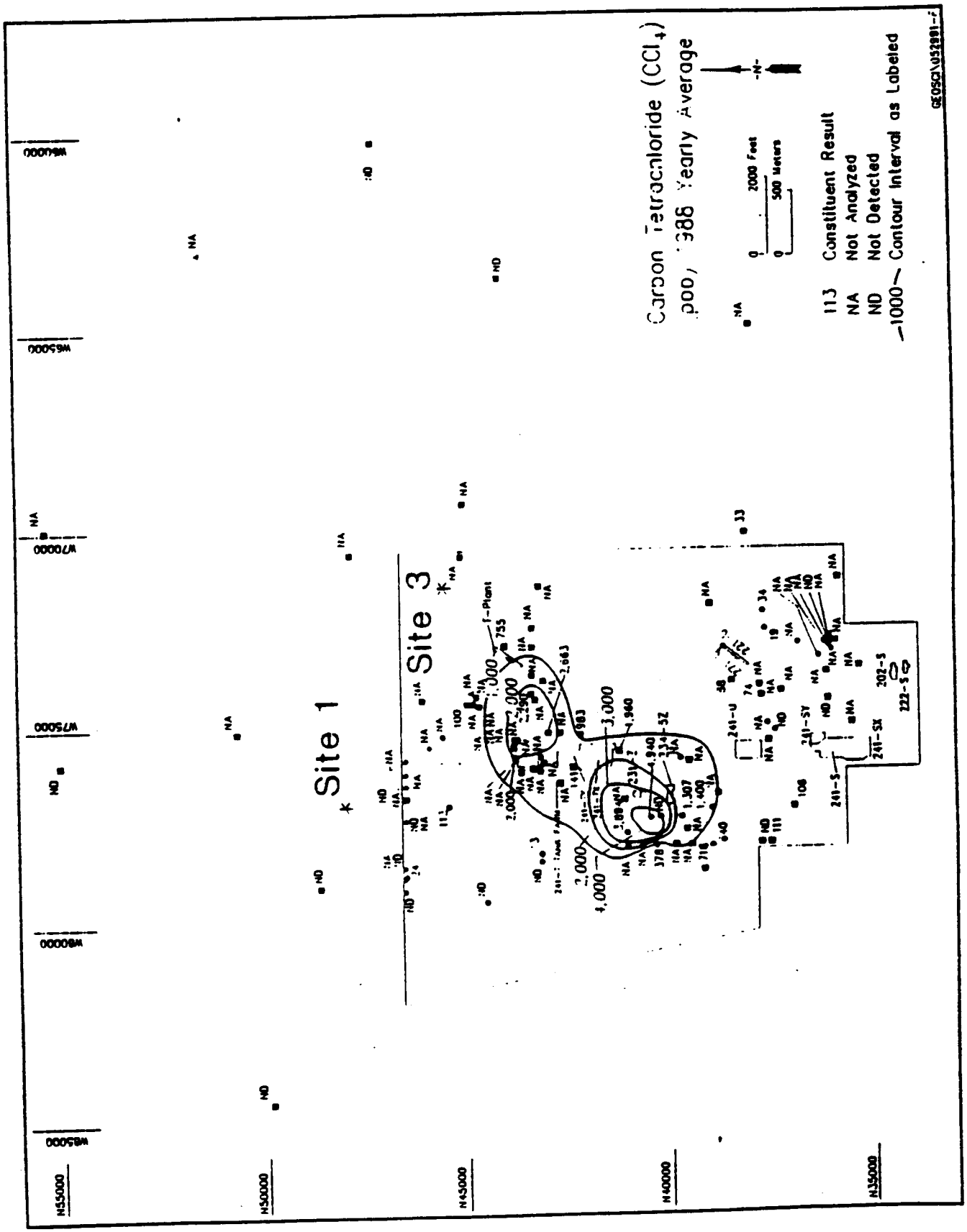

Figure 13. Carbon Tetrachloride Plume Map in the Vicinity of Sites 1 and 3.

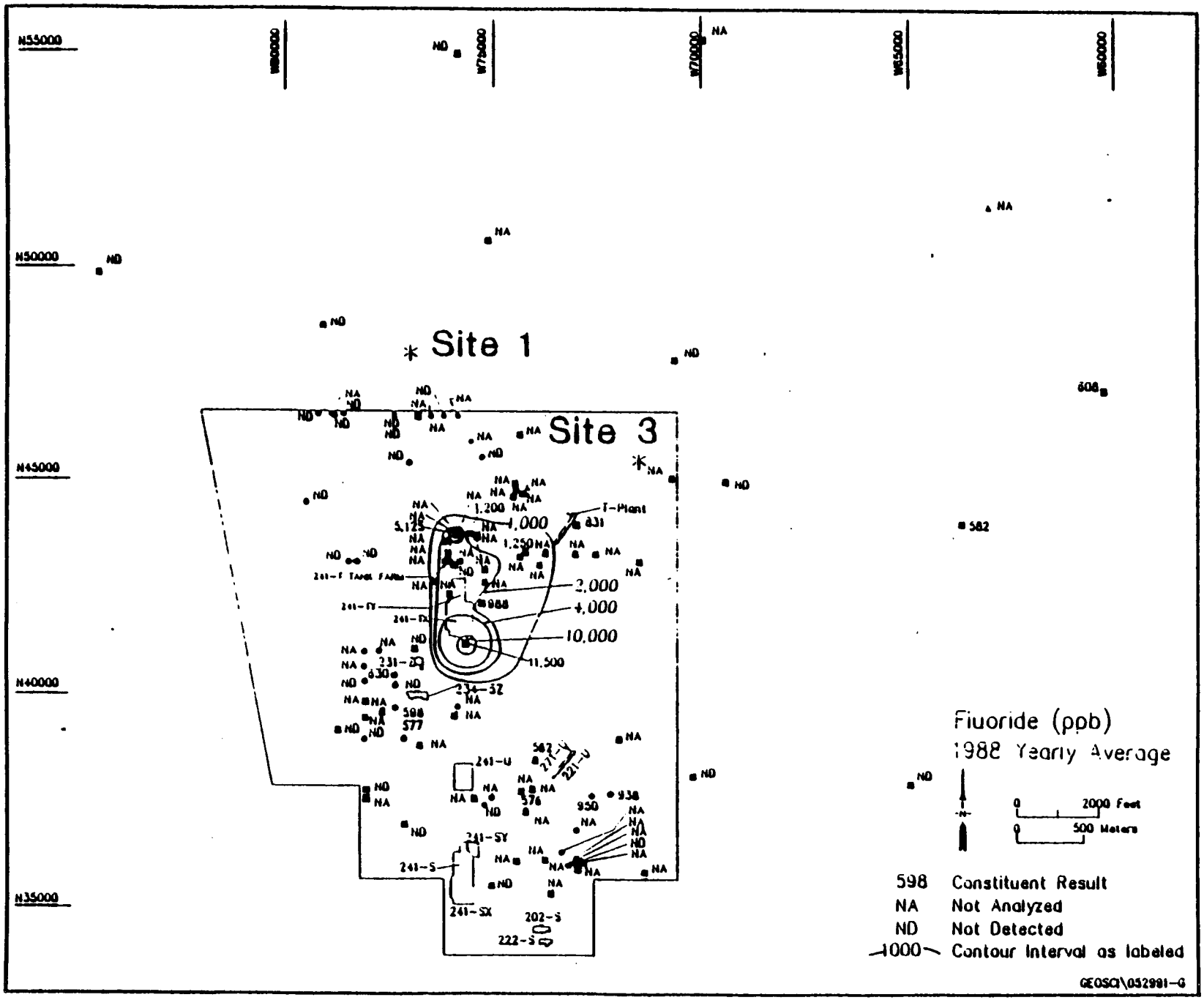

Figure 14. Fluoride Plume Map in the Vicinity of Sites 1 and 3.

3.1.7 Gross Alpha

Groundwater chemistry data for gross alpha activity is not available for the year 1988 in the 200 West Area. Analysis of the 1989 and 1990 gross alpha data reveals no definable plume in the 200 West Area. The highest gross alpha activity was measured near U Plant in well 299-W19-3 with 1,360 pCi/L in April 1990. The highest gross alpha activity near site 3 was in well 299-W11-14, with 220 pCi/L in August 1989. Gross alpha activity was found below detection in most wells near site 1. Well 299-W7-6 had 4.2 pCi/L in March 1989, increasing to 143 pCi/L in May 1990. Figure 15 shows gross alpha activity in wells 299-W7-6 and 299-W11-14 as a function of time. Well 299-W7-6 shows an increase in gross alpha over time, while well 299-W11-14 shows a decrease in gross alpha over two sampling periods. These results indicate that gross alpha may increase in the vicinity of site 1 in the future. The WAC 173-200 standard for gross alpha is 15 pCi/L.

3.1.8 Uranium

In the approximately 20 wells sampled in 1988 in the 200 West Area, relatively low concentrations of uranium were found throughout the 200 West Area wells except near U Plant in well 299-W19-3. This well is located adjacent to the inactive 216-U-1 and 216-U-2 cribs. Uranium concentrations in this well have been decreasing over the past 3 yr following remediation activities associated with those cribs (Figure 16). The highest uranium concentration near site 3 was in well 299-W11-9 with 1 pCi/L in February 1988. The highest uranium concentration near site 1 was in well 299-W7-6 with 7.6 pCi/L in September 1989. The concentration of uranium is not anticipated to increase at either candidate site. There is no WAC standard for uranium.

3.1.9 Chloroform

Groundwater chemistry data indicates that a low concentration chloroform plume is located in the central portion of the 200 West Area upgradient of site 3. The highest chloroform concentrations in this area were in well 299-W15-8, with 1,650 ppb chloroform in June 1988. The highest concentration of chloroform near site 3 was found in well 299-W11-14, with 10 ppb in November 1988. Wells located near site 1 were not analyzed for chloroform in 1988, 1989, or 1990. The WAC 173-200 standard for chloroform is 7 ppb.

3.1.10 Iodine-129

Only a few wells in the southeast portion of the 200 West Area were sampled for iodine-129 in 1988. The highest concentration of iodine-129 was in well 299-W19-3, with 15.5 pCi/L in May 1988. This concentration decreased to 5.6 pCi/L in April 1990. Only 1 well near site 3 was sampled for iodine-129 in 1988, well 299-W11-14, with 2.2 pCi/L in April 1990. Wells near site 1 were not sampled for iodine-129 in 1988, 1989, or 1990. There is no WAC 173-200 standard for iodine-129.

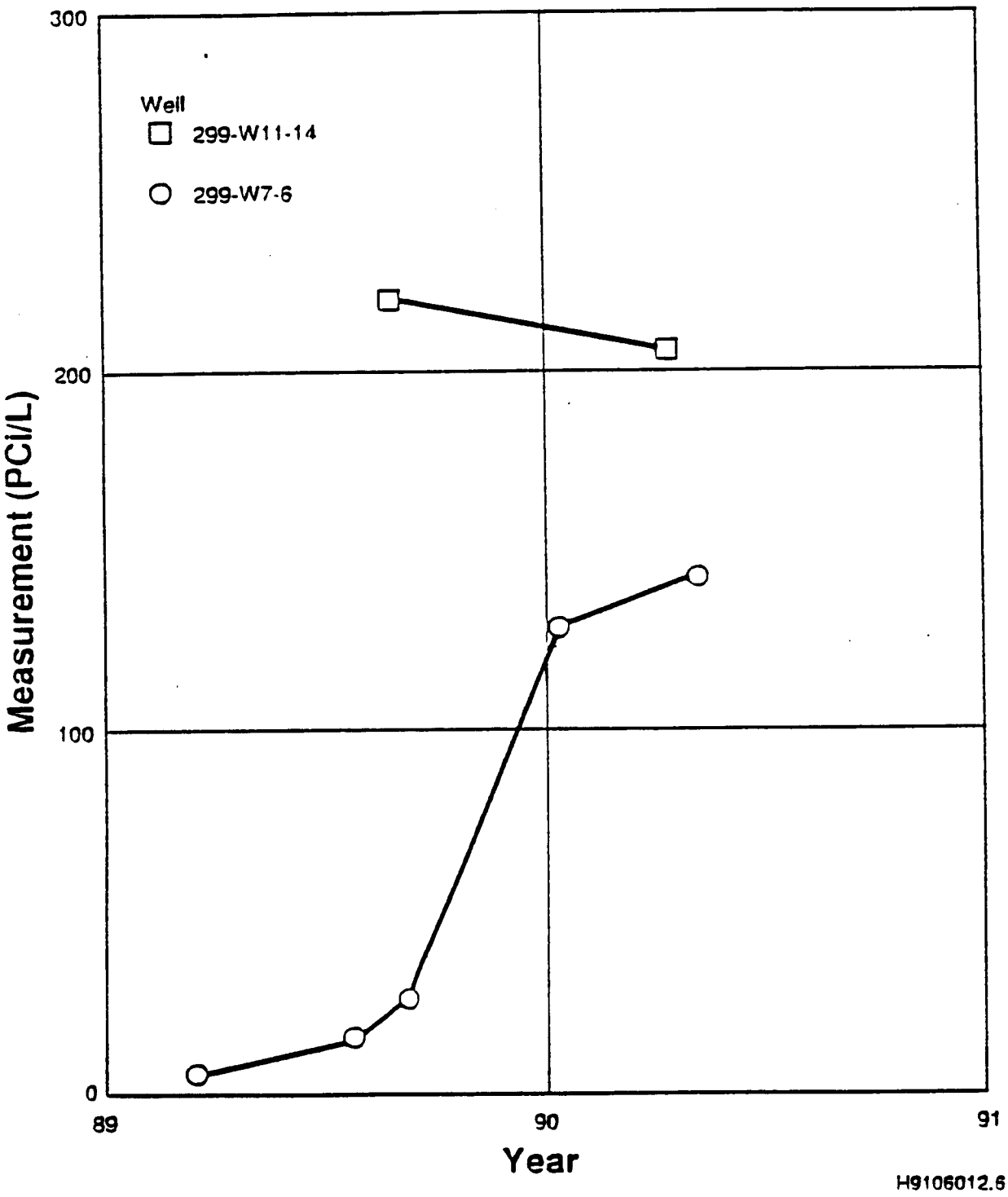

Figure 15. Gross Alpha Activity as a Function of Time for Wells 299-W7-6 and 299-W11-14.

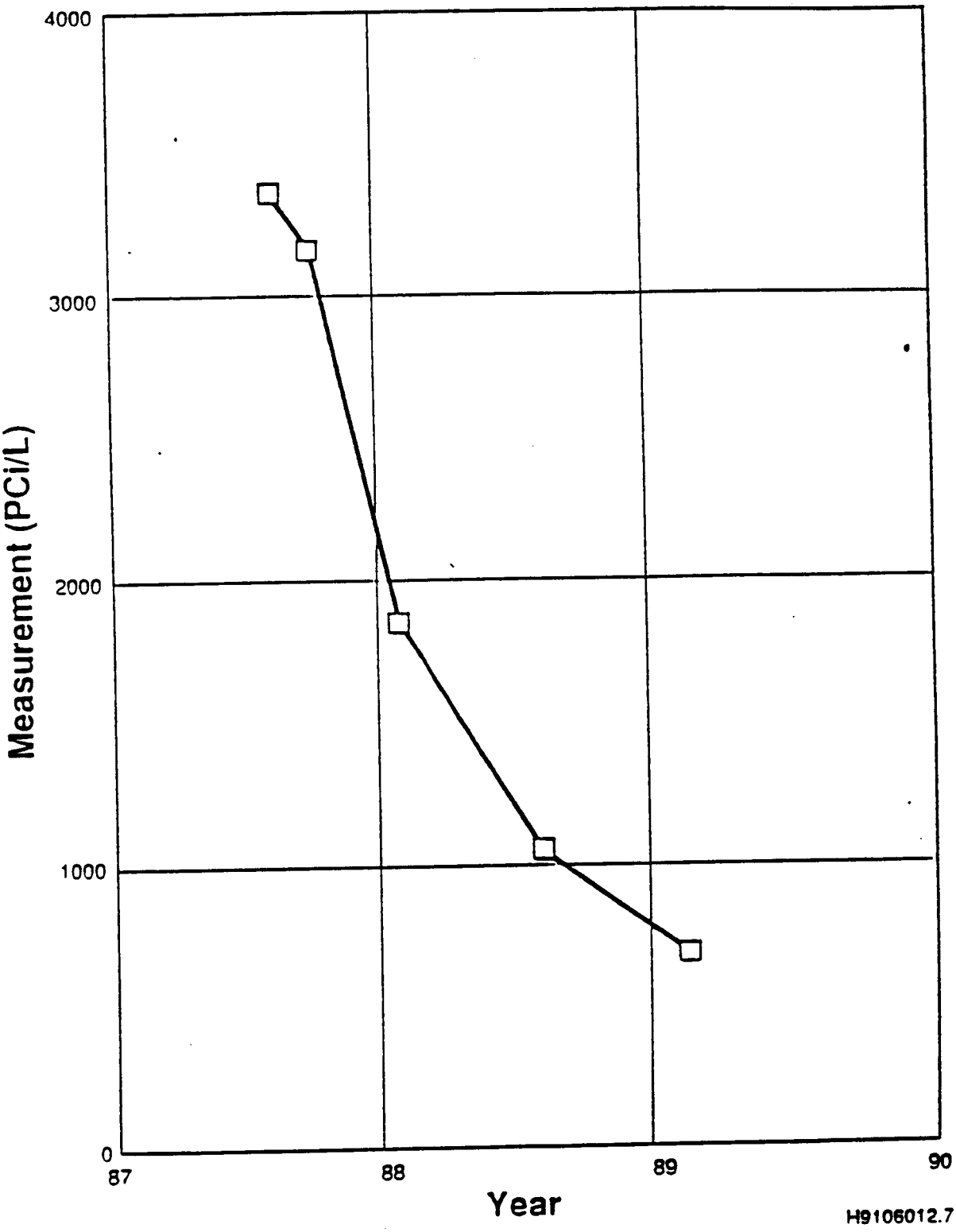

Figure 16. Uranium Concentration as a Function of Time for Well 299-W19-3.

3.1.11 Chromium

Approximately 14 wells in the 200 West Area were sampled for chromium in 1988. The highest concentration was found near the 216-T crib in well 299-W10-9, with 152 ppb in March 1988. Well 299-W6-2, 4,000 ft west of site 3, was the nearest well to site 3 sampled for chromium. Well 299-W6-2 had a chromium concentration of 36 ppb in October 1988 and in April 1990 a concentration of 59 ppb. The well nearest to site 1 sampled for chromium was well 299-W7-2, with 17 ppb in October 1988. This well contained 11 ppb in January 1990. The WAC 173-200 standard for chromium is 50 ppb.

3.1.12 Trichloroethylene

A few wells were sampled for trichloroethylene in the 200 West Area in 1988. Of these, the highest concentrations were found near the 216-T crib. Well 299-W10-4 had a concentration of 28 ppb in August 1988. The nearest well to site 3 sampled for trichloroethylene was well 299-W11-7, with 7 ppb in November 1988. Wells near site 1 were not sampled for trichloroethylene in 1988, 1989, or 1990. The WAC 173-200 standard for trichloroethylene is 3 ppb.

3.1.13 Cyanide

Only 4 widely spaced wells in the 200 West Area had detectable cyanide. The highest concentration was in well 299-W14-2, with 69 ppb in November 1988. All wells located immediately upgradient of site 3 either were not sampled for cyanide or had no detectable cyanide. There is no WAC 173-200 standard for cyanide.

3.1.14 WAC 173-200-040 Constituents

Groundwater chemistry data collected since 1988 from wells in this study were evaluated for WAC 173-200 constituents. Twenty-two of these constituents were present at concentrations above their detection limits in at least some wells. These constituents are gross beta, tritium, nitrate, carbon tetrachloride, cyanide, fluoride, chromium, chloroform, trichloroethylene, gross alpha, technetium-99, iodine-129, uranium, chloride, 1,1,1 trichloroethane, methylene chloride, radium, manganese, sulfate, zinc, barium, and lead. Table A in the Appendix contains all groundwater quality data collected since 1988 for WAC constituents present above their detection limit in wells chosen for this study. The following discussion summarizes constituents not previously mentioned.

Chloride was above the detection limit for wells in the central portion of the 200 West Area and in wells immediately upgradient of site 1. Well 299-W7-4, located 2,500 ft upgradient of site 1, had a chloride concentration of 19,300 ppb in January 1990. Well 299-W11-14, 2,000 ft upgradient of site 3, had a chloride concentration of 66,900 ppb in April 1990. Although detected, chloride was not found in concentrations above the WAC 173-200 standard of 250,000 ppb in any of the wells analyzed.

1,1,1 trichloroethane was detected in wells in the central and northern portion of the 200 West Area. Well 299-W7-7, 2,000 ft upgradient of site 1, had a concentration of 6 ppb in May 1990. This concentration is below the WAC 173-200 standard of 200 ppb. Well 299-W11-7, upgradient of site 3, had a 1,1,1 trichloroethane concentration of 7 ppb in November 1988.

Methylene chloride was detected above the WAC 173-200 standard (5 ppb) in 6 wells in the western portion of the 200 West Area. One of these wells (299-W7-1) is 2,000 ft upgradient of site 1. This well had a methylene chloride concentration of 51 ppb in December 1988. The highest concentration of methylene chloride detected in the 200 West Area was in well 299-W15-15, with 4,100 ppb in December 1988.

Radium was found in concentrations above the detection limit in 6 wells, and above the WAC 173-200 standard (3 pCi/L) in 2 wells located in the 200 West Area. The highest radium concentration detected in the 200 West Area was found in well 299-W7-6, approximately 2,000 ft upgradient from site 1. Figure 17 shows radium concentrations as a function of time in well 299-W7-6, which are above the background level at the Hanford Site of 0.2 pCi/L (Evans et al. 1990). The radium concentration in this well has increased dramatically over a 1-yr period. This increase may be due to well integrity problems during construction. Bentonite materials, which are used to construct groundwater monitoring wells at the Hanford Site, can increase radium concentrations if introduced to the groundwater. Since radium is not expected to occur in waste effluent at the Hanford Site, bentonite may have been introduced to the groundwater during well construction causing an elevated radium concentration. Data for this well is not available after January 1990.

Manganese was found in concentrations above the detection limit in 23 wells, and above the WAC 173-200 standard (50 ppb) in 3 wells in the 200 West Area. Two wells upgradient of site 1 had concentrations above the WAC standard. The highest concentrations of manganese upgradient from site 1 were found in well 299-W7-3, with 233 ppb in October 1988; concentrations appear to be decreasing based on 1988-1989 data. The manganese concentrations measured in well 299-W7-6 are above the background level at the Hanford Site of 16 ppb (Evans et al. 1988). Well 699-55-76, located 7,000 ft downgradient from site 1, had manganese concentrations above the detection limit.

Sulfate was found in concentrations above the detection limit in 56 wells located throughout the 200 West Area. The highest sulfate concentration detected in the 200 West Area was in well 299-W11-23, located in north-central 200 West Area. This well had a concentration of 142,000 ppb; which is below the WAC 173-200 standard of 250,000 ppb. Well 299-W11-14, approximately 2,000 ft upgradient from site 3, shows an increase in concentration from 64,900 ppb in June 1988 to 76,100 ppb in April 1990. Well 299-W7-9, 2,500 ft upgradient from site 1, had a concentration of 52,700 ppb in April 1990. The estimated natural background concentration for sulfate in groundwater at the Hanford Site is 34,300 $\pm$ 16,900 ppb (Evans 1990) and the initial concentration in unprocessed Columbia River water used in Hanford Site processing is 10,600 ppb (WHC 1990b).

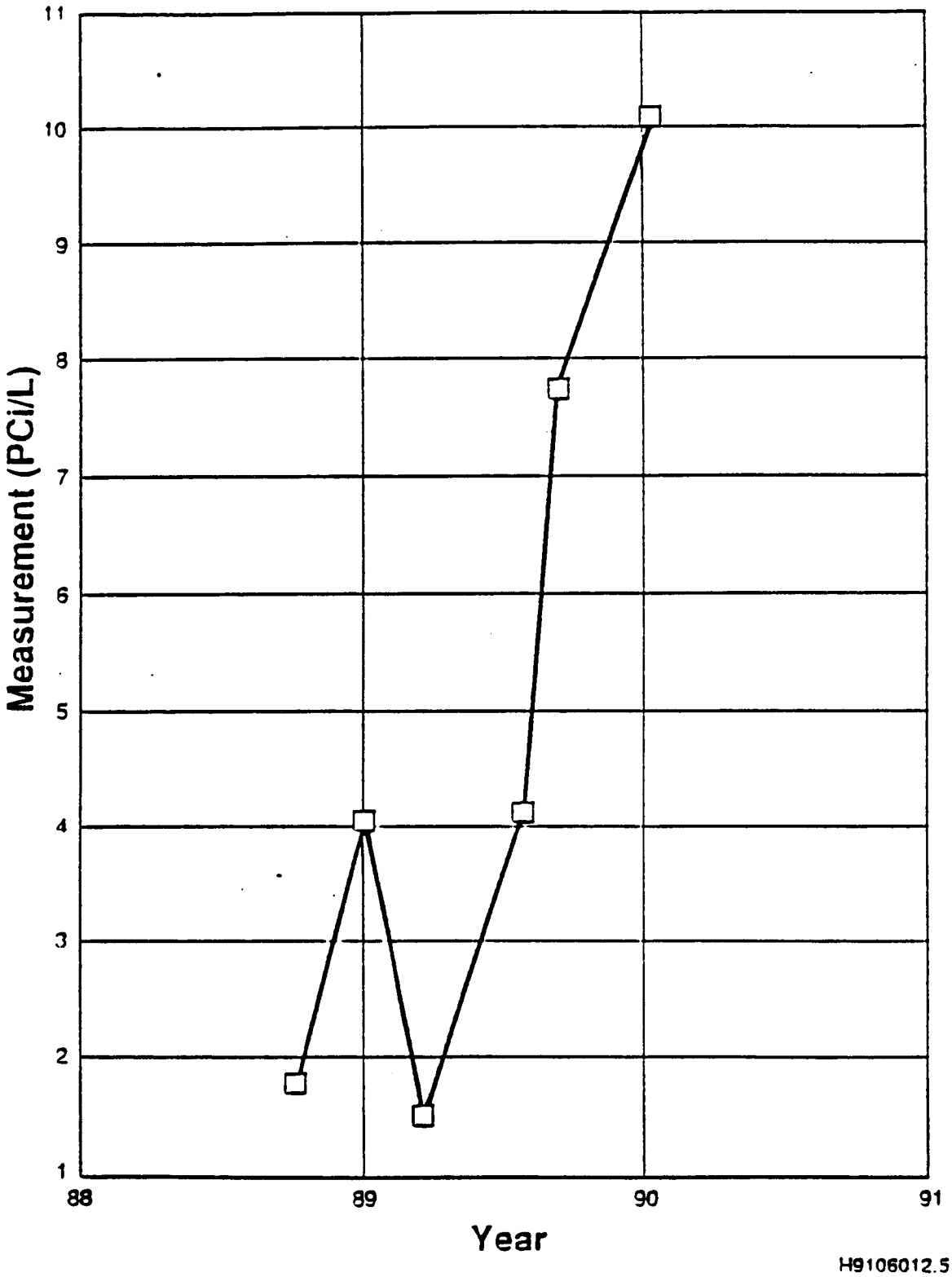

Figure 17. Radium Concentration as a Function of Time for Well 299-W7-6.

Three metals were identified at concentrations above their detection limits. Barium and zinc were detected in wells throughout the 200 West Area and downgradient of both sites 1 and 3. Lead was detected in the western portion of the 200 West Area. All three metals had concentrations well below the WAC 173-200 standards for these constituents. Barium concentrations were generally within the range of the barium background level of 42 +/- 20 ppb (Evans et al. 1990). Two wells located near U crib had barium concentrations of approximately 200 ppb, slightly higher than the background level. Lead concentrations were found to be only slightly above the detection limit in 4 wells, two of which are located upgradient from site 1. Zinc was found above the detection limit in wells upgradient of site 1. Well 299-W7-5, 2,000 ft upgradient of site 1, had a zinc concentration of 407 ppb in March 1989 that subsequently decreased to 8 ppb in January 1990.

3.2 GROUNDWATER QUALITY AT CANDIDATE SITE 2

Groundwater quality information for candidate sites 1 and 3 has generally been discussed with respect to the uppermost aquifer underlying the sites. For most of the Hanford Site the top of the uppermost aquifer is defined by the regional water table and the aquifer is unconfined. However, there are aquifers below the uppermost aquifer that are confined by the Columbia River basalts. Directly beneath site 2 the unconfined aquifer is absent due to the presence of the basalt subcrop at a higher elevation than the regionally unconfined water table (Figure 4). The uppermost aquifer beneath site 2 is the confined Rattlesnake Ridge interbed. Because wastewater disposal to site 2 could affect both the unconfined and the confined aquifers, groundwater quality data available for both aquifers in the vicinity of site 2 will be discussed. The majority of chemistry data is associated with the unconfined aquifer.

There are three primary areas of wastewater disposal that may have affected groundwater quality in the vicinity of site 2. They are as follows:

- The 216-B-3 Pond system
- Gable Mountain Pond
- The 200 East Area.

The relative effects of wastewater disposal in these areas on site 2 will depend primarily on the groundwater flow paths between them and the site 2 location. In general, areas downgradient of site 2 should have little influence on the site, whereas areas directly upgradient have the potential to strongly influence groundwater quality at the site. The contoured groundwater map (Figure 18) illustrates the present-day flow conditions around site 2 (after Kasza et al. 1990). The groundwater mound resulting from wastewater disposal to the B Pond system is a local high in the water table and controls flow directions and gradients over a large area of the Hanford Site.

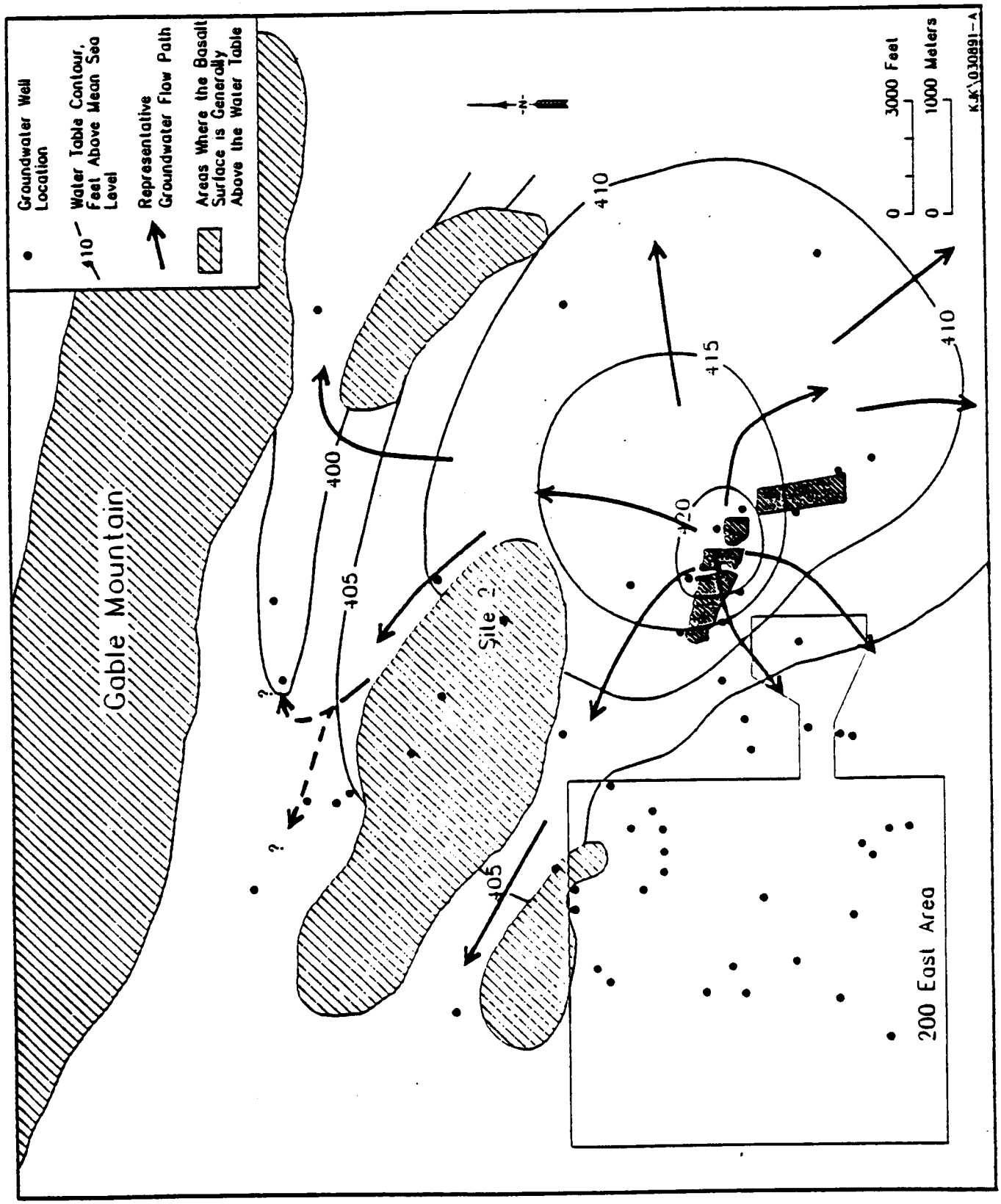

Figure 18. Water Table Elevation Map for Site 2.

Representative groundwater flow paths associated with the mound are illustrated in Figure 18. Groundwater flow in the unconfined aquifer originates at the crest of the B Pond mound and moves downgradient, radially outward from the mound. Site 2 is downgradient from the mound but flow paths in the unconfined diverge around the basalt subcrop because it extends above the water table in this area. From analysis of these flow paths, groundwater quality in the unconfined near site 2 will be strongly influenced by the quality of groundwater in the B Pond mound.

Disposal of wastewater to Gable Mountain Pond ceased in 1985 and the former pond area now appears to be downgradient of site 2; however, it is possible that during operation of the pond some groundwater flow could have been from Gable Mountain Pond towards site 2. This flow would have been controlled by the relative heights of the mounds at Gable Mountain Pond and B Pond. Unfortunately, this is not well documented, nor is the relative amount of wastewater discharged to Gable Mountain Pond versus B Pond known. Therefore, groundwater chemistry and contamination at Gable Mountain Pond will be examined since it may have affected the groundwater quality at site 2.

A variety of waste disposal activities have taken place within and close to the 200 East Area. Currently, the 200 East Area is downgradient of site 2 and should have little effect on groundwater quality there. However, the volume of wastewater discharged to the B Pond system has declined in recent years and the mound shows some signs of responding by decreasing in elevation. If the mound continues to decay, groundwater flow directions in this area will shift and portions of the 200 East Area and the area to the north of the 200 East Area would be the most likely to influence the groundwater quality at site 2 in this case. There is an area containing high concentrations of several constituents located to the north of the 200 East Area, which will be discussed in the following section on groundwater quality. Well 699-50-53 appears to be at the approximate center of the contamination and typically contains high concentrations of constituents.

The list of specific constituents of interest for site 2 includes nitrate, tritium, strontium-90, cyanide, technetium, and cobalt-60. These constituents have been routinely identified in many of the wells surrounding site 2 and are known byproducts of Hanford Site activities in the 200 East Area. Their presence in the groundwater at elevated concentrations indicates contamination attributable to wastewater disposal in and around the 200 East Area. Of these six; nitrate, tritium, and strontium-90 are on the WAC 173-200 list. The discussion of groundwater chemistry in the following sections is organized by constituent and makes use of data collected from all three categories of wells since 1988. Table B in the Appendix contains all chemistry data for these constituents from 1988 through 1990. Sufficient data was not available to present this data in the form of contoured concentration maps. Instead, concentrations of several constituents at individual wells are posted on the base map.

3.2.1 Nitrate

There are several sources of nitrate in groundwater in the vicinity of site 2. Figure 19 shows the locations of the major nitrate plumes based on 1988 data. Nitrate was measured in approximately two thirds of the wells in this study during 1990. Wells monitoring the northern portion of B Pond contained up to 10,950 ppb nitrate and wells surrounding the Gable Mountain Pond contained nitrate in concentrations up to 49,200 ppb. Wells bounding the north side of the 200 East Area have values of about 10,000 to 14,000 ppb. Evans (1990) documented a large area of elevated nitrate concentrations north of the 200 East Area. Concentrations were over 600,000 ppb at well 699-50-53 during 1989 but were not measured during 1990. The only nitrate plume that would likely affect site 2 is the plume associated with the B Pond mound, where concentrations in the northern part are below the WAC 173-200 standard of 45,000 ppb. Figure 20 shows 1990 nitrate concentrations plotted for all wells in this study. Values were not available for a sufficient number of wells to permit contouring in the area of candidate site 2.

3.2.2 Tritium

Tritium contamination of the unconfined aquifer is well documented in the vicinity of site 2 (Serkowski et al. 1989) and many of the wells are routinely monitored for tritium. The WAC 173-200 standard for tritium is 20,000 pCi/L and was exceeded only in wells monitoring the B Pond area where maximum concentrations reached 95,400 ppb. Since this area is upgradient of site 2, groundwater moving towards site 2 from the B Pond mound will contain tritium at a concentration that may exceed the regulatory limit. Figure 21 shows the boundaries of a tritium plume in the separations area based on 1988 data, while Figure 22 shows tritium data in wells near site 2.

3.2.3 Strontium-90

Strontium-90 exceeds the WAC 173-200 standard of 40 pCi/L in six wells located around the inactive Gable Mountain Pond area. The wells are 699-54-49, 699-53-47A and B, 699-53-48A and B, and 699-54-48 with concentrations ranging from approximately 10 to over 400 pCi/L. These wells are about 6,000 ft downgradient of site 2. Strontium-90 appears to occur only within this localized area and has been attributed to a strontium-90 release to Gable Mountain Pond in 1964. Details of the release and its affect on the groundwater is documented in Fuchs et al. (1984). No other wells in this study contained strontium-90 above the detection limit, although there is a strontium-90 plume in the central portion of the 200 East Area as documented by Evans (1990). This plume is relatively distant from, and is not upgradient of site 2 and should have no effect on the groundwater quality there.

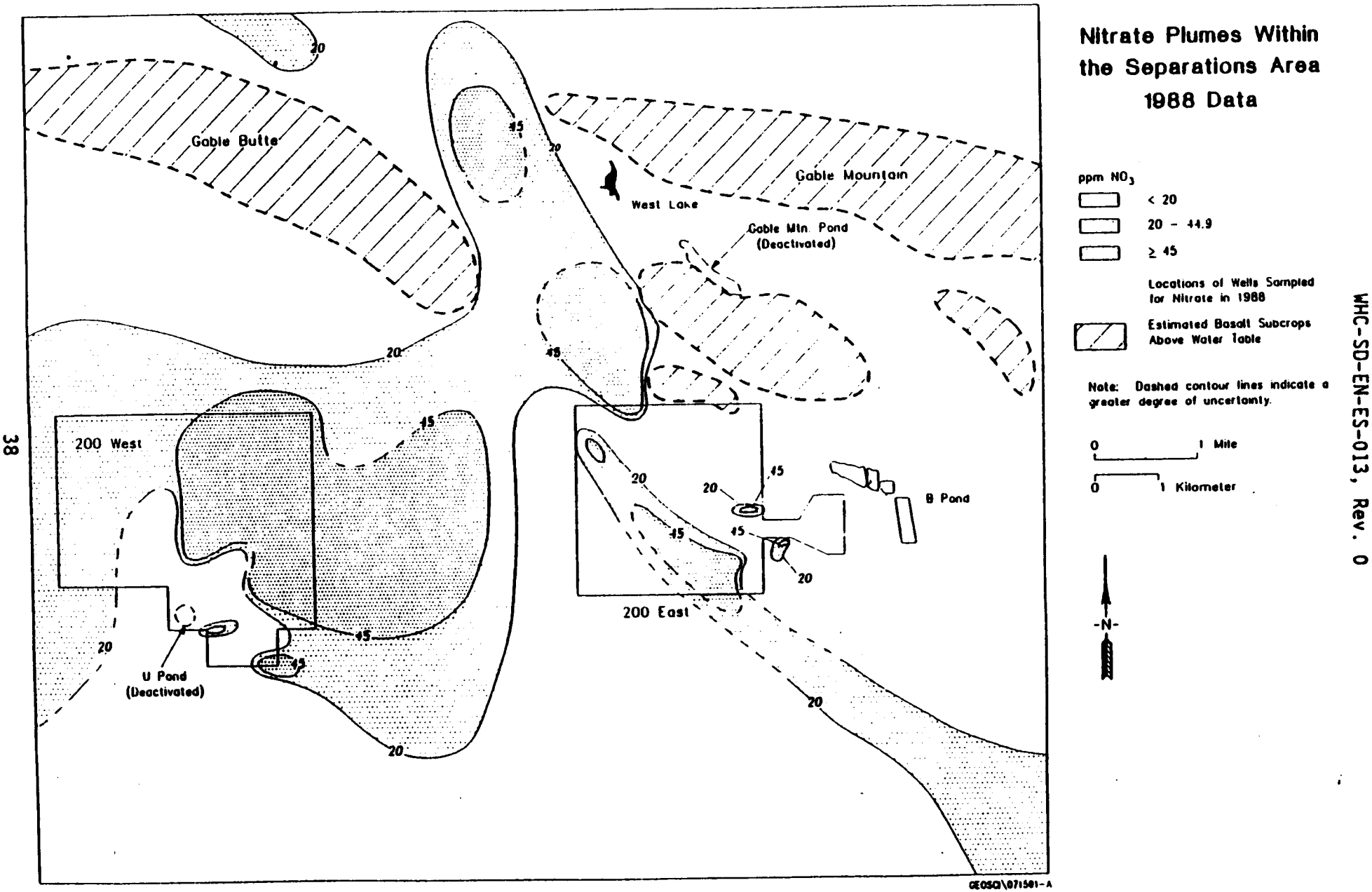

Figure 19. Nitrate Plume Map for the Separations Area (after Serkowski).

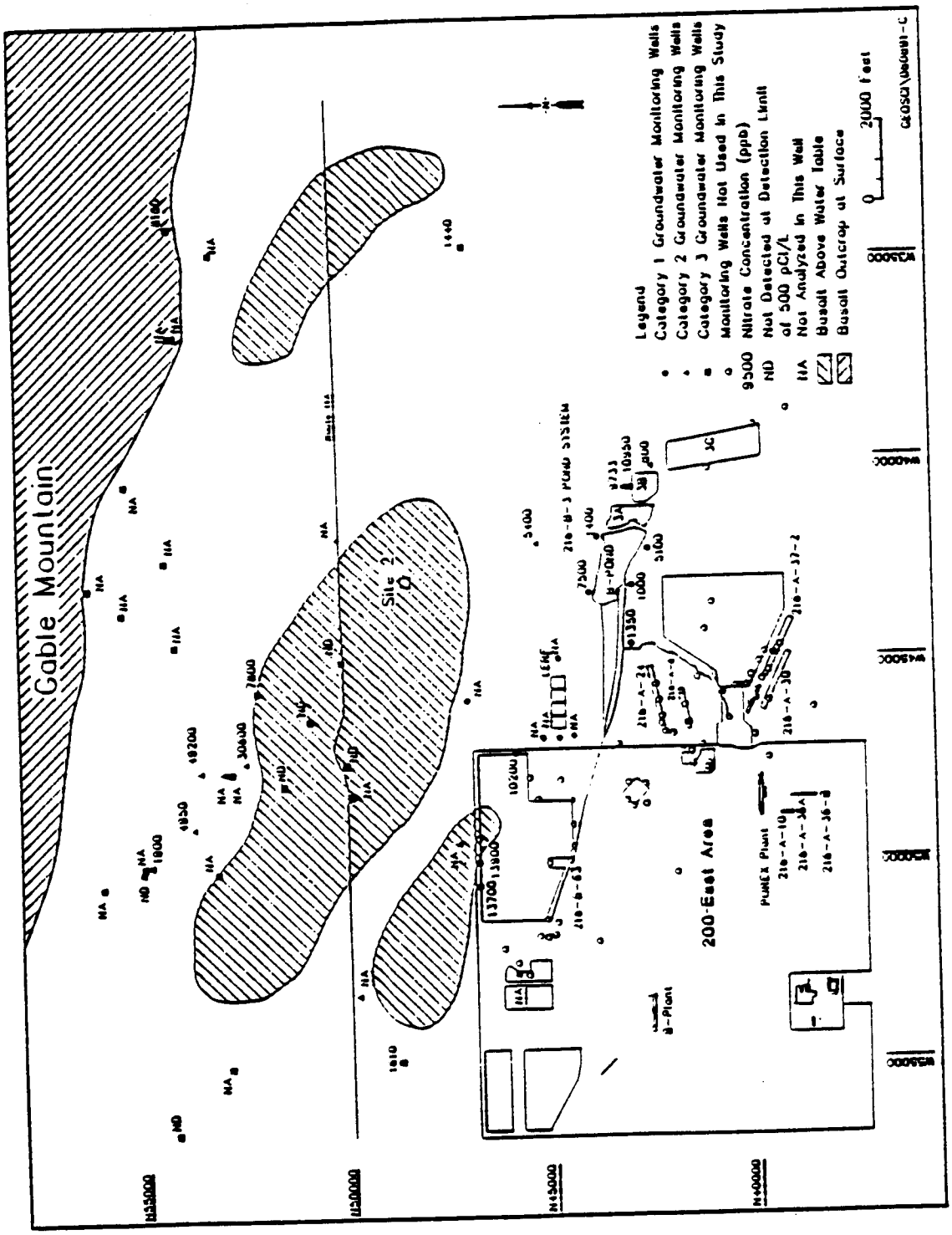

Figure 20. Nitrate Data from Groundwater Monitoring Wells Near Site 2 (1990).

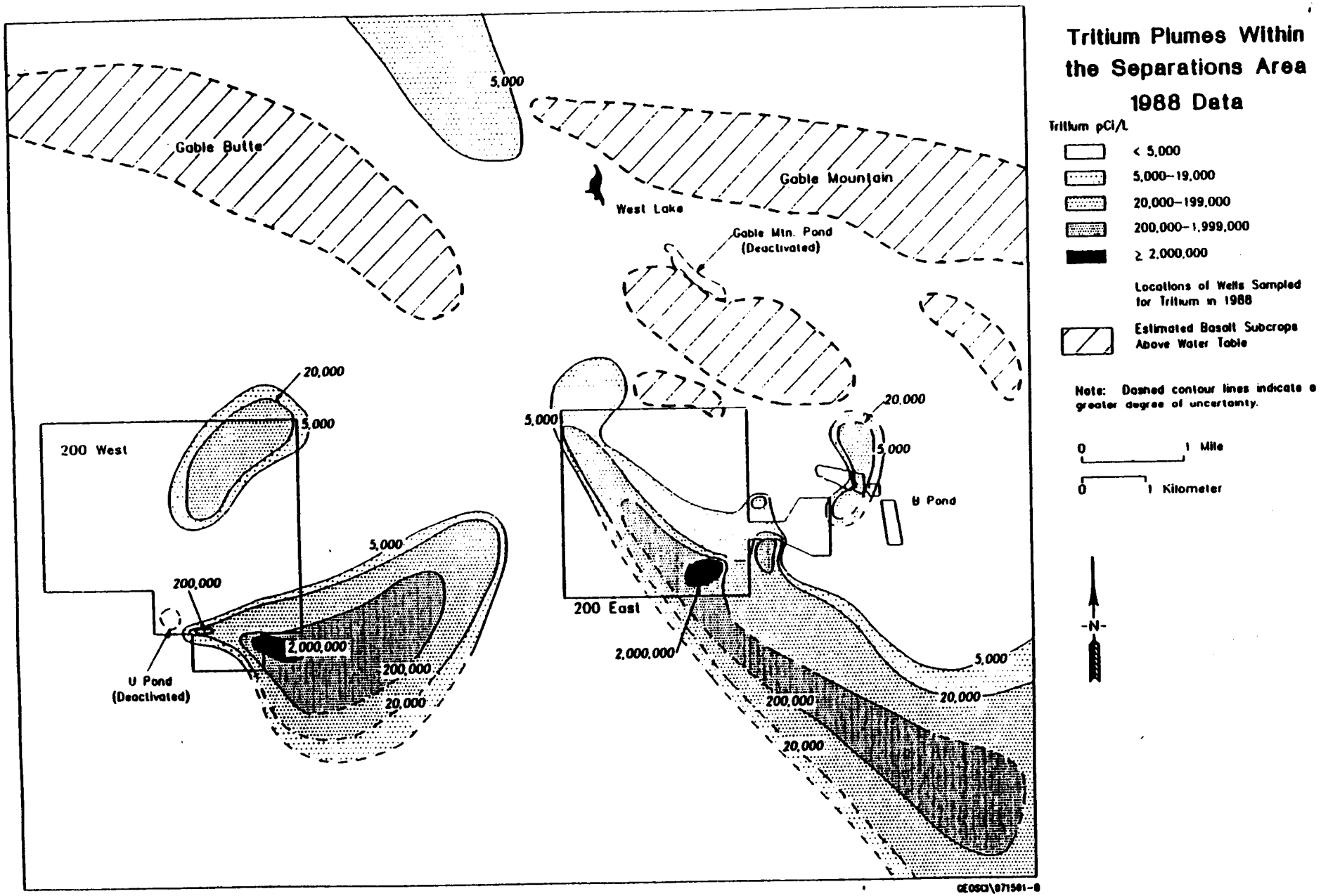

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Figure 21. Tritium Plume Map for the Separations Area (after Serkowski).

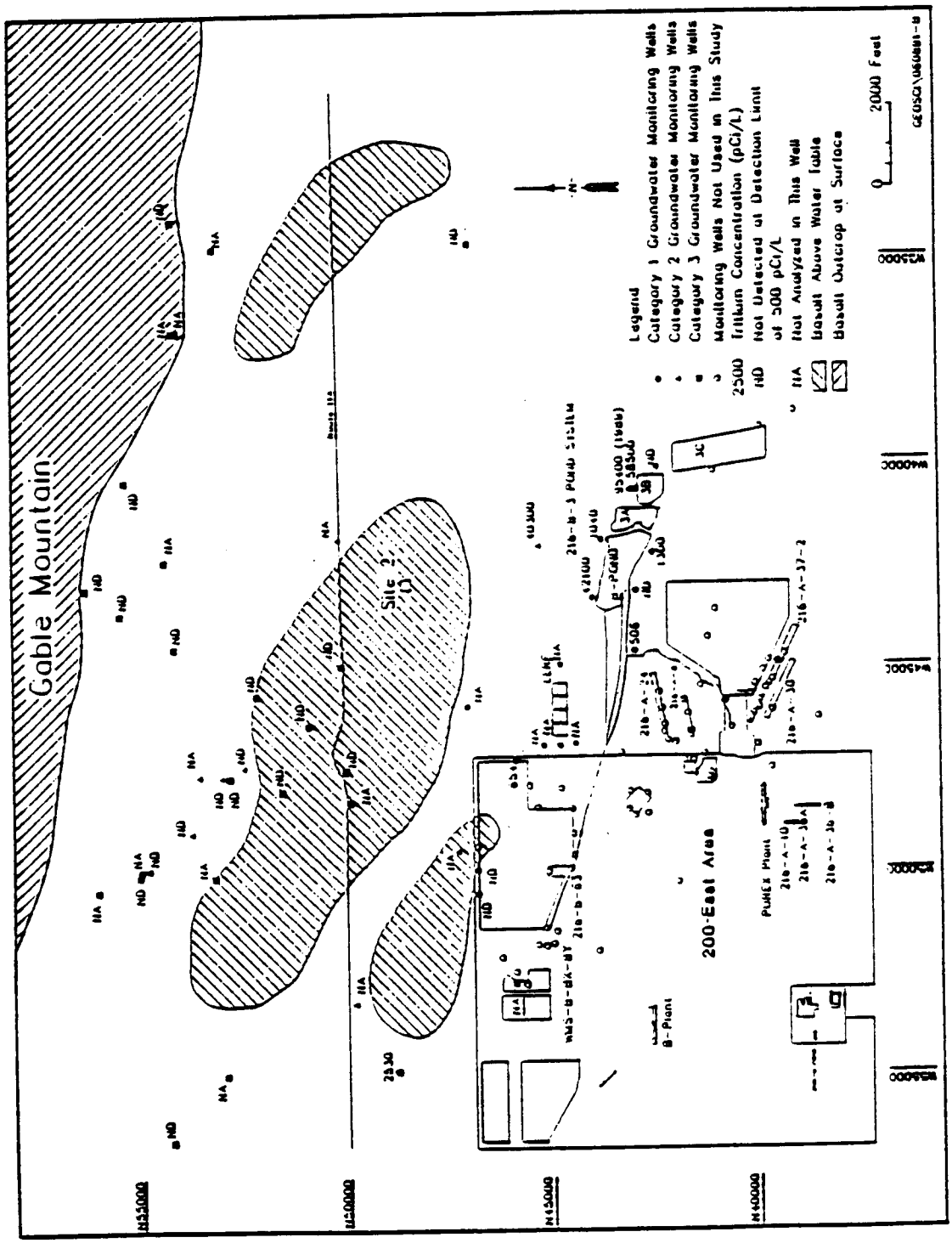

Figure 22. Tritium Data from Groundwater Monitoring Wells Near Site 2. (1990)

3.2.4 Cyanide

Well 699-50-53 contained 580 ppb of cyanide when it was last measured in 1989 and well 699-49-55A contained 85 ppb in 1990. Evans (1990) has documented the presence of cyanide north of the 200 East Area where these two wells are located. Only one other well contained cyanide above the detection limit of 10 ppb. Well 699-45-42 had 151 ppb in 1988 and has not been sampled for cyanide since. Because cyanide has been sampled in only a few wells, little interpretation is possible.

3.2.5 Technetium-99

Sampling of technetium-99 occurred in a small number of wells during 1988 and 1989, and no measurements were made during 1990. Only wells 699-50-53 and 699-49-55A contained technetium-99 above the detection limit of 15 pCi/L. Concentrations in 1988 were on the order of 8,750 to 32,000 pCi/L and had declined to 3,191 to 391 pCi/L in 1989.

3.2.6 Cobalt-60

Data for cobalt-60 is available only from wells around Gable Mountain Pond, on the western side of the study area, and a few wells monitoring B Pond. The Drinking Water Standard of 100 pCi/L was exceeded only at wells 699-50-53 and 699-49-55A with concentrations up to 532 pCi/L. These concentrations are associated with the plume originating in the 200 East Area around the BY cribs.

3.2.7 WAC 173-200-040 Constituents

All of the wells chosen for use in this study were reviewed for WAC 173-200 constituents using chemistry data collected since 1988. Twelve of these constituents are present in some wells at concentrations above their detection limits. These are nitrate, tritium, strontium, gross beta, gross alpha, sulfate, chloride, fluoride, zinc, barium, manganese, and arsenic. The limited number of constituents identified results from two factors: (1) most of the WAC constituents are not analyzed for at the Hanford Site except in the RCRA and CERCLA programs and (2) many of the WAC 173-200 constituents are not present in the wastewater streams produced at the Hanford Site and, therefore, are not present in the groundwater. Table B in the Appendix contains all data collected since 1988 for WAC constituents detected in wells chosen for this study. The following discussion summarizes this data with the exception of nitrate, tritium, and strontium, which were discussed previously.

Gross beta activity is above the WAC 173-200 standard of 50 pCi/L in wells surrounding Gable Mountain Pond with activities up to 857 pCi/L, although in most wells the activity is approximately 100 pCi/L or less. Gross beta activity in wells around Gable Mountain Pond is attributed to strontium decay. Gross beta activity also exceeded the standard in wells 699-49-55A and 699-50-53 with activity in 1988 ranging from around 1,000 to 3,000 pCi/L and from several hundred to over 1,000 pCi/L in 1989. This gross beta is most likely due to decay of cobalt-60 and technetium-99 in the groundwater in this area. No analyses were made during 1990 at these wells.

Gross alpha activity did not exceed the WAC 173-200 standard of 15 pCi/L in any wells. Activities of approximately 3 to 9 pCi/L were present in some of the wells around Gable Mountain Pond and in wells 699-49-55A and 699-50-53.

Sulfate concentrations exceeded the WAC 173-200 standard of 250,000 ppb in well 699-50-53. Concentrations in this well averaged about 400,000 ppb in 1988 with one measurement near this value in 1989 and no analyses in 1990. The estimated natural background concentration for sulfate in groundwater at the Hanford Site is 34,300 +/- 16,900 ppb (Evans 1990) and the initial concentration in unprocessed Columbia River water used at the Hanford Site is 10,600 ppb (Liquid Effluent Study 1989). Two wells north of the 200 East Area have concentrations elevated above the background values (wells 699-49-55A and 699-50-53 contain from 100,000 to over 400,000 ppb of sulfate) as do some of the wells along the northern boundary of the 200 East Area (wells 299-E34-5 and 299-E34-6 contain up to 100,000 ppb sulfate). Concentrations in wells monitoring B Pond are near to the natural background.

Chloride did not exceed the WAC 173-200 standard of 250,000 ppb in any of the wells used for this study. The wells mentioned previously, with elevated levels of sulfate, generally have chloride above the estimated natural background concentration of 10,300 +/- 6,500 ppb (Evans 1990).

Only five wells in this study have fluoride data (699-45-42, 699-47-50, 699-49-55A, 699-50-53, and 699-55-50C). Concentrations were well below the WAC 173-200 standard of 4,000 ppb, and close to the estimated natural background concentration of 370 +/- 100 ppb (Evans 1990).

Four metals were identified in wells at concentrations above their detection limits; arsenic, barium, manganese, and zinc. Very few wells had metals data available for evaluation. Arsenic was present in several wells around B Pond and in the 200 East Area at concentrations around 5 to 15 ppb. The WAC 173-200 standard for arsenic is 0.05 ppb but natural background measured for the Hanford Site is estimated to be 3.9 +/- 2.4 ppb (Evans 1990). All barium concentrations were below 100 ppb with the WAC 173-200 standard at 1,000 ppb. Wells generally had concentrations within the range of the estimated background value of 42 +/- 20 ppb (Evans 1990). Manganese was above the WAC standard of 50 ppb in well 299-43-41F during 1990 with values from 79 to 216 ppb and well 299-E35-1 had one 1990 value of 60 ppb. Manganese concentration has declined in well 299-E34-6 to below the WAC 173-200 standard since late 1988. Zinc was detected in wells at concentrations rarely exceeding 100 ppb, which is well below the WAC 173-200 standard of 5,000 ppb. The wells containing metals identified in this study do not define any distinct areas of contamination.

3.2.9 Groundwater Quality in the Confined Aquifer at Site 2

Because site 2 is situated in an area where the basalt subcrop extends above the unconfined water table, the unconfined aquifer is absent directly beneath the site and for an area extending at least 2,000 ft outward from the site (Figure 4). There are several wells to the west of site 2 completed in the confined aquifer or basalt (699-50-45, 699-51-46, 699-52-46A, 699-50-48A and B, 699-52-48, and 699-53-50). Few data are available with which to evaluate the quality of water in the uppermost confined aquifer. Groundwater

chemistry data for these wells shows no elevated levels of WAC constituents or site-specific constituents with the exception of gross beta, which is slightly above the WAC limit of 50 pCi/L in well 699-51-46 and above the detection limit in adjacent well 699-52-48.

4.0 CHARACTERIZATION WELL PLACEMENT

The groundwater quality assessment that constitutes this study relied on information from existing monitoring wells in the vicinity of the candidate sites. As proposed by Koegler (1991), groundwater monitoring wells will be installed to characterize groundwater quality and will provide information necessary to determine site-specific conditions and provide a basis for final site selection. Each borehole will be designed for a dual purpose: (1) characterization of the sediments in the vadose and saturated zones and (2) groundwater monitoring to determine groundwater quality at the site. These groundwater monitoring wells will assist in completion of the Site Environmental Assessment (Section J) of WAC 173-216-070 as presented in the characterization work plan for the candidate sites. Recommendations in this report will focus on groundwater characterization at each site. This report does not address a final groundwater monitoring network for the selected site except to recommend existing wells that can be sampled for additional information and that could become part of a site-specific monitoring network.

All groundwater samples obtained for site characterization should be sampled, analyzed, tracked, and reported in accordance with a quality assurance program sufficient to meet permitting requirements. An initial sample round should be analyzed then resampled to confirm any constituents above standards or appearing in unexpected concentrations in the wells. Samples should be analyzed using the methods specified in the statement of work that defines the Hanford Site RCRA analytical contract.

4.1 CANDIDATE SITES 1 AND 3

Installation of a single monitoring well at each of candidate sites 1 and 3 will be sufficient to characterize groundwater quality at each site. The monitoring well should be located approximately 250 ft upgradient of the soil column disposal site. This will minimize interference with operation of the facility and will adequately characterize the chemistry of groundwater moving into the site. The characterization monitoring wells for the selected site may be used as part of the final groundwater monitoring system. The site coordinates for the characterization boreholes to be drilled are as follows:

- Site 1 N47600
  W77000
- Site 3 N45100
  W71900

The new characterization groundwater monitoring wells at sites 1 and 3 should be analyzed for the constituents listed in WAC 173-200-040 and for the other constituents discussed in this report that occur in the 200 West Area and near sites 1 and 3. These constituents are summarized for each site in Table 3. In order to support a WAC 173-216 permit, the wells will also be sampled for major cations, anions, Ph, temperature, and conductivity.

Table 3. Summary of Groundwater Quality Data for Three Candidate Sites.

Constituent	Site	Well upgradient of site with detected constituent	Concentration in well	Feet from site	Probable source
Barium	1	299-W7-5	33 ppb	2,000	Unknown*
Carbon Tetrachloride	1	299-W7-5	43 ppb	2,000	216-Z-18 Crib, Z-1A TF, Z-9 Trench
Chromium	1	299-W7-2	11 ppb	2,000	216-T-28 Crib
Gross Alpha	1	299-W7-6	143 pCi/L	2,000	Unknown*
Gross Beta	1	299-W7-6	55.1 pCi/L	2,000	Unknown*
Nitrate	1	299-W7-4	74,300 ppb	2,500	216-T Cribs
Technetium-99	1	299-W7-4	79 pCi/L	2,500	216-T Cribs
Tritium	1	299-W7-6	1,050 pCi/L	2,000	216-T Cribs
Uranium	1	299-W7-6	7.6 pCi/L	2,000	216-T Cribs
Zinc	1	299-W7-5	407 ppb	2,000	Unknown*
Nitrate	2	699-45-42	5,400 ppb	3,500	B Pond
Tritium	2	699-45-42	40,300 pCi/L	3,500	B Pond
Barium	3	299-W11-23	51 ppb	4,500	Unknown*
Carbon Tetrachloride	3	299-W11-14	860 ppb	2,000	216-Z-18 Crib, Z-1A TF, Z-9 Trench
Chloroform	3	299-W11-14	10 ppb	2,000	Unknown*
Fluoride	3	299-W11-14	962 ppb	2,000	LWDF-Z Plant
Gross Alpha	3	299-W11-14	220 pCi/L	2,000	Unknown*
Gross Beta	3	299-W11-14	193 pCi/L	2,000	Unknown*
Iodine-129	3	299-W11-14	2.2 pCi/L	2,000	Unknown*
Nitrate	3	299-W12-1	6,730 pCi/L	2,000	216-T Cribs
Technetium-99	3	299-W10-1	514 pCi/L	5,000	216-T Cribs
Trichloroethylene	3	299-W11-7	7 ppb	3,500	Unknown*
Tritium	3	299-W12-1	6730 pCi/L	2,000	216-T Cribs

*Several sources may contribute to contamination.

Several existing wells have been selected for a single round of sampling to supplement the present groundwater chemistry data base and provide additional data for characterization of the candidate sites. These wells were selected based on their proximity to sites 1 or 3, and the occurrence of elevated concentrations detected in the well of specific constituents of interest. The constituents of interest for each site and the wells to be sampled are summarized in Tables 4 and 5. Because most of the wells scheduled for site 1 are category 1 wells and are located immediately upgradient of site 1 (approximately 2,000 ft), they may also be utilized in a facility groundwater monitoring network. Their utilization would depend on the regulatory requirements for the C-018H facility monitoring network.

Table 4. Site 1 Monitoring Program for Existing Groundwater Wells.

Well number	Constituent to be sampled
299-W7-1	methylene chloride
299-W7-2	technetium-99, carbon tetrachloride, fluoride, chromium
299-W7-4	nitrate, carbon tetrachloride, fluoride, technetium-99
299-W7-5	tritium, barium, zinc, carbon tetrachloride
299-W7-6	alpha, chloroform, tritium, uranium, radium, gross beta
299-W7-8	nitrate
699-49-79	nitrate, carbon tetrachloride

Table 5. Site 3 Monitoring Program for Existing Groundwater Wells.

Well number	Constituent to be sampled
299-W6-1	tritium
299-W11-3	uranium
299-W11-7	gross beta, trichloroethylene
299-W11-14	chloroform, gross beta, carbon tetrachloride, fluoride, alpha, iodine-129
299-W11-15	technetium-99
299-W12-1	tritium, nitrate, technetium-99, carbon tetrachloride, fluoride, alpha
699-45-69A	nitrate

All existing wells (except one category 2 well) selected to supplement site 3 data are category 3 wells. These wells would not be suitable for use as part of a permanent groundwater monitoring network for site 3.

4.2 CANDIDATE SITE 2

Placement of a new groundwater monitoring well at candidate site 2 can only address groundwater quality of the confined Rattlesnake Ridge interbed since the unconfined aquifer does not extend beneath site 2. The advantages of installing a new well through the basalt into the Rattlesnake Ridge interbed at site 2 are outweighed by the risk of creating a potential pathway along the borehole annulus for migration of the disposal water into the confined aquifer. Because very little chemistry data is available on the Rattlesnake Ridge confined aquifer, the existing wells completed in the confined aquifer near site 2 should be sampled once to provide a baseline for future comparisons. Table 6 summarizes the monitoring program for existing wells. If disposal activities were to occur at site 2, this information could help determine if pathways exist for movement of water from the vadose zone through the basalt into the uppermost confined aquifer. Tritium can be used as a contamination indicator since it will be present in the wastewater at significant concentrations and is not detected in these wells at the present time.

Additional groundwater chemistry data for the unconfined aquifer surrounding the site 2 basalt subcrop should be collected from existing wells for site selection. Two category 2 wells are in adequate locations to provide this data. Well 699-50-42 is approximately 2,000 ft northeast of site 2, near the intersection of the basalt subcrop and the water table. Well 699-45-42 is south-southeast of the site and is downgradient from the B Pond mound. The groundwater quality at these wells are representative of the unconfined aquifer conditions that might be affected by any wastewater disposal operations at site 2. These wells will be sampled for the WAC 173-240 list of constituents, site-specific constituents discussed previously, major cations and anions, pH, temperature, and specific conductivity as shown in Table 6.

Site 2 would be difficult to characterize in the event it were chosen as the final site. There are no existing wells, in either the confined or unconfined, located or constructed appropriately to be used as part of a final groundwater monitoring network. Flow paths of the wastewater disposed at this site would be extremely difficult to predict due to the complicated hydrogeology of this site. Water infiltrating from a disposal facility at candidate site 2 could follow one of several paths once the top of the basalt is reached. Some portion could continue to infiltrate downward through any existing cracks or fractures in the basalt and enter the confined aquifer if a downward gradient exists. Conversely, all or part of the water could migrate laterally across the top of the basalt. This migration would be in response to gravity and follow the slope of the basalt subcrop. However, since the topography of the basalt subcrop is unknown, the eventual path of the water is also unknown. Wastewater could conceivably move across the basalt subcrop in one or several directions. This wastewater could flow into the unconfined aquifer somewhere along the approximately 6-mi long boundary where the basalt subcrop intersects the water table. Monitoring this boundary and the effects of wastewater disposal on existing groundwater quality in the confined and unconfined would be a complicated and costly effort.

Table 6. Site 2 Proposed Monitoring Program for Existing Groundwater Wells.

Well number	Constituent to be sampled
699-50-42 699-45-42	WAC 173-200 list, major cations and anions, pH, temperature, specific conductivity, tritium, nitrate, strontium-90, cyanide, technetium-99, and cobalt-60.
699-50-45 699-51-46 699-50-48A 699-50-48B 699-52-48	Tritium.

5.0 CONCLUSIONS

The objective of this study was to compile existing technical data for use in evaluating groundwater quality around each of the three candidate sites. The completed tasks include: (1) evaluation of existing groundwater monitoring wells in the vicinity of each candidate site to determine their suitability in characterization and permitting activities, (2) evaluation of extent of groundwater contamination and presentation of groundwater quality data in the vicinity of each candidate site, (3) estimation of the number and placement of additional groundwater monitoring wells needed at the candidate sites based on the groundwater quality findings, and (4) recommendations for sampling and analysis.

Approximately 50 wells in the vicinity of site 2 and 107 wells in the vicinity of sites 1 and 3 were selected to evaluate existing groundwater quality data. These wells were chosen based on their proximity to each of the three candidate sites and their position relative to the site and groundwater flow directions. The wells were categorized according to well design, construction, and sampling technique (Tables 1 and 2).

Two objectives guided investigation of groundwater quality at each site: (1) to search for evidence of past or present waste disposal practices related to Hanford Site activities that may have affected groundwater quality at each site and (2) to determine if any of the WAC 173-200-040 list of constituents is present in groundwater at each site. A summary of the major constituents affecting groundwater quality at each candidate site is presented in Table 3. Table 7 summarizes the status of the WAC 173-200-040 constituents in the study wells. The constituents are grouped according to whether they have been detected above or below the WAC 173-200-040 standard or not detected at all.

Table 7. WAC 173-200-040 Constituents.

Constituents Detected in Study Wells Below the WAC Standard		
barium	chloride	lead
1,1,1 trichloroethane	zinc	
Constituents Detected in Study Wells Above the WAC Standard		
arsenic	carbon tetrachloride	chloroform
chromium	fluoride	gross alpha
gross beta	manganese	methylene chloride
nitrate	radium	strontium-90
sulfate	trichloroethylene	tritium

Constituents Not Detected (Most Not Analyzed)		
cadmium	3,3 dichlorobenzidine	2 methoxy-5-nitroaniline
mercury	1,1 dichloroethane	2 methylaniline
selenium	1,2 dichloroethane	2 methylaniline hydrochloride
silver	1,2dichloropropane	4,4 methylene bis(N,N-dimethyl) aniline
endrin	1,3 dichloropropene	mirex
methoxychlor	dichlorvos	nitrofurazone
2-4 D	dieldrin	N-nitrosodiethanolamine
2,4,5-TP Silvex	3,3 dimethoxybenzidine	N-nitrosodiethylamine
copper	3,3 dimethylbenzidine	N-nitrosodimethylamine
iron	1,2 dimethylhydrazine	N-nitrosodiphenylamine
acrylamide	2,4 dinitrotoluene	N-nitroso-di-n-propulamine
acrylonitrile	2,6 dinitrotoluene	N-nitrosopurrolidine
aldrin	1,4 dioxane	N-nitroso-di-n-butylamine
aniline	1,2 diphenylhydrazine	N-nitroso-n-methylethylamine
aramite	direct black 38	PAH
azobenzene	direct blue 6	PBBs
benzene	direct brown 95	PCBs
benzidine	epichlorohydrin	O-phenylenediamine
benzo(a)pyrene	ethyl acrylate	propylene oxide
benzotrichloride	ethylene dibromide	2,3,7,8-Tetrachlorodibenzo-p-dioxin
benzyl chloride	ethylene thiourea	p,a,a,a-Tetrachlorotoluene
bis(chloroethyl)ether	folpet	2,4 toluenediamine
bis(chloromethyl)ether	furazolidone	o-toluidine
bix(2ethylhexyl)phthlate	furium	toxaphene
bromodichloromethane	furmecyclox	2,4,6-trichlorophenol
bromoform	heptachlor	trimethyl phosphate
carbazole	heptachlor epoxide	vinyl chloride
chlordane	hexachlorobenzene	
chlorodibromomethane	hexachlorocyclohexane (alpha)	
4 chloro-2-methylaniline	hexachlorocyclohexane (technical)	
4 chloro-2-methylaneline hydrochloride	hexachlorodibenzo-p-dioxin	
o-chloronitrobenzene	hydrazine/hydrazine sulfate	
p-chloronitrobenzene	lindane	
chlorthalonil		
diallate		
DDT		
1,2 dibromoethane		
1,4 dichlorobenzene		

Groundwater quality data for sites 1 and 3 were discussed collectively in a single section of this report since areas of contamination were in the vicinity of both sites. The following discussion presents a summary of the groundwater chemistry data as it relates specifically to each site because the impacts of facility operations on sites 1 and 3 are very different. This is due to the differing groundwater flow paths between the various areas of contamination and each site.

Groundwater quality at site 1 has been relatively unaffected by Hanford Site operations. The only constituents present at site 1 are nitrate, barium, and zinc, which occur in concentrations below the WAC 173-200 standards in wells both upgradient and downgradient of site 1. A number of wells, approximately 2,000 ft upgradient from site 1, were above detection limits for gross beta, tritium, technetium-99, gross alpha, uranium, and chromium. Of these constituents, only gross beta and gross alpha exceed the WAC 173-200 standards. All constituents found in these upgradient wells could potentially migrate into site 1.

Groundwater flow toward site 2 originates at the groundwater mound associated with the B Pond system. Therefore, any contaminants in the northern portion of the mound will influence the groundwater quality around the vicinity of site 2, approximately 1 mi from the ponds. Nitrate in the B Pond mound is below the WAC 173-200 standards, while tritium is above. These two constituents are in groundwater moving towards site 2 and have most likely been in wastewater discharged to this area since operations began in 1945. These constituents would be expected to appear in water samples along this flow path at concentrations less than those in the center of the mound due to dilution and dispersion. Strontium-90 occurs in concentrations above the WAC 173-200 standard only in wells upgradient of site 2 near the closed Gable Mountain Pond. A large area of contamination containing several constituents is situated to the north of the 200 East Area (Figure 23). This plume originates from disposal activities at the BY cribs and contains high concentrations of nitrate, cyanide, technetium-99, cobalt-60, gross beta, and sulfate. Currently, the plume is downgradient of site 2 and should not influence the groundwater quality there. However, if the elevation of the groundwater mound at B Pond decreases, then this plume would be at least partially upgradient of site 2 and could affect the groundwater around site 2, particularly to the west of site 2 where flow from the plume towards site 2 would originate.

Several contaminant plumes have either migrated into or appear to be migrating toward site 3. From evidence of high concentrations in wells upgradient and downgradient of site 3, nitrate, carbon tetrachloride, and tritium are inferred to have migrated into and beyond site 3. Concentrations of nitrate and carbon tetrachloride associated with these plumes are above the WAC 173-200 standard. Barium and zinc have been detected in wells both upgradient and downgradient of site 3, indicating the presence of these constituents at site 3. The water quality data for barium and zinc do not reveal a distinct area of contamination. Technetium-99, gross beta, and fluoride plumes appear to be migrating toward site 3, but have not been found in wells downgradient from site 3. Fluoride and gross beta occur in concentrations above the WAC 173-200 standard. There is no WAC 173-200 standard for technetium-99. A number of wells, approximately 2,000 ft upgradient from site 3, had concentrations above the WAC 173-200 standard for gross alpha, trichloroethene, chloroform, and iodine, but no definable plume is indicated.

Installation of a single groundwater monitoring well, approximately 250 ft upgradient of each proposed site, will be sufficient for site selection characterization efforts at sites 1 and 3. Each well should be sampled for Ph,. temperature, conductivity, major cations and anions, and site-specific

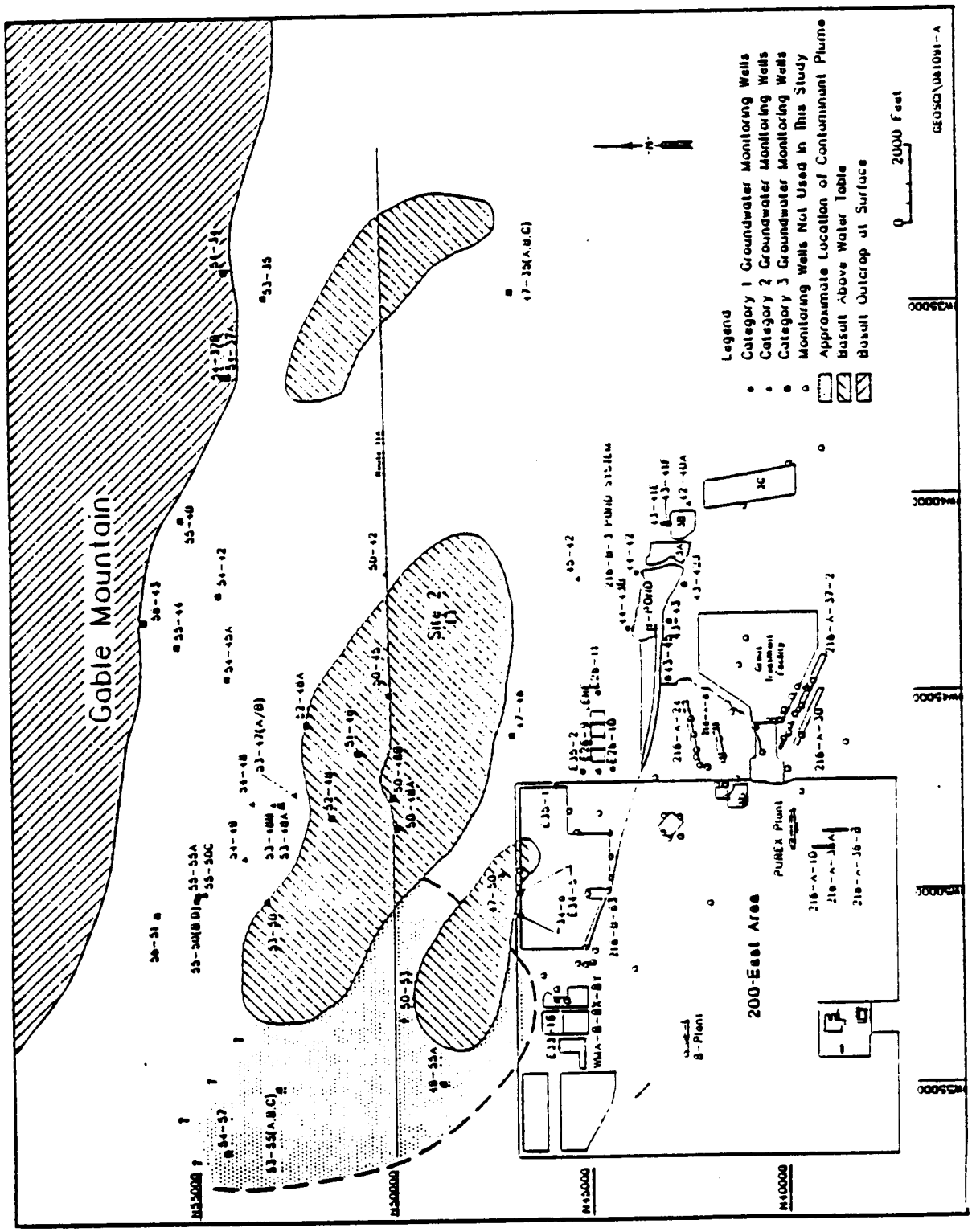

Figure 23. Approximate Location of Mixed Contaminant Plume North of 200 East Area.

constituents as mentioned previously and listed in the WAC 173-200 standard. Existing wells should be sampled for additional chemistry data as given in Tables 4 and 5.

No new groundwater monitoring wells at site 2 are recommended by virtue of this evaluation. Site 2 is geologically and hydrologically complex and would require extensive additional characterization work to evaluate for use as a disposal site, or if a groundwater monitoring network were to be installed to monitor a disposal facility at this site. A well extending through the basalt into the confined aquifer may compromise the usefulness of the site as a disposal facility by allowing vertical leakage of water between the confined and unconfined aquifers. Additional groundwater chemistry data from the unconfined aquifer should be gathered through further sampling of existing wells (Table 6).

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APPENDIX

CONSTITUENTS IDENTIFIED IN WELLS FROM 1988 THROUGH 1990

This Appendix is divided into two tables containing groundwater chemistry data for the three candidate sites. Table A contains all data for wells used to evaluate sites 1 and 3. Table B contains all data for wells used to evaluate site 2. The data is presented in alphabetical order by constituent, then organized by well number and date of sampling. Only values where the constituent was detected above the detection limit are given and values above the WAC 173-200 standard are flagged. Where no WAC standard exists, then other relevant standards such as the drinking water standards have been referenced. The column headed REG LIMIT contains this information, abbreviated as follows:

- WWQS - Washington Water Quality Standard (WAC 173-200)
- DWS - Drinking Water Standard
- PRGWTR - Standard used in the Purgewater Strategy Report.

TABLE A

CHEMICAL CONSTITUENTS DETECTED IN WELLS NEAR SITES 1 AND 3

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
1,1,1-trichloroethane	A67	UWQS	200.00	5.00	PPB	2-U10-13	8.00	3/22/89
						2-U18-21	8.00	3/22/89
						2-U7-4	8.00	3/22/89
							5.00	1/19/90
Barium, filtered	H20	UWQS	1000.00	6.00	PPB	2-U10-13	31.00	10/04/88
							25.00	1/03/89
							27.00	3/22/89
							31.00	7/25/89
							27.00	9/13/89
							29.00	9/13/89
							32.00	1/10/90
						2-U10-14	73.00	10/04/88
							64.00	1/03/89
							65.00	3/21/89
							64.00	7/27/89
							66.00	9/15/89
							68.00	1/10/90
						2-U10-15	48.00	2/25/90
						2-U10-16	43.00	2/27/90
						2-U10-4	35.00	3/04/88
							32.00	8/23/88
							31.00	12/01/88
						2-U10-8	24.00	11/30/88
						2-U10-9	59.00	3/21/88
							56.00	8/23/88
							52.00	2/28/90
						2-U11-23	51.00	2/28/90
						2-U14-2	79.00	3/22/88
							77.00	8/23/88
							74.00	11/10/88
						2-U15-10	60.00	3/02/88
							67.00	8/16/88
							54.00	11/29/88
						2-U15-15	25.00	10/07/88
							28.00	10/07/88
							29.00	12/29/88
							34.00	5/15/89
							28.00	7/11/89
							27.00	9/12/89
							30.00	3/13/90
						2-U15-16	61.00	10/06/88
							65.00	12/29/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Barium, filtered	H20	WQOS	1000.00	6.00	PPB	2-W15-16	65.00	5/09/89
							60.00	7/25/89
							65.00	9/22/89
							64.00	3/15/90
							64.00	4/03/90
						2-W15-17	85.00	10/05/88
							76.00	3/12/90
						2-W15-18	43.00	10/06/88
							42.00	12/30/88
							44.00	5/15/89
							38.00	7/11/89
							42.00	9/25/89
							44.00	3/16/90
						2-W15-19	63.00	1/15/90
						2-W15-20	47.00	1/12/90
						2-W15-24	50.00	3/13/90
						2-W15-4	39.00	3/02/88
							67.00	11/29/88
						2-W18-15	20.00	1/08/88
							23.00	8/17/88
							20.00	12/01/88
						2-W18-21	23.00	10/05/88
							23.00	12/30/88
							20.00	3/22/89
							22.00	5/16/89
							26.00	5/16/89
							25.00	9/12/89
							23.00	3/13/90
						2-W18-22	58.00	10/05/88
							48.00	12/30/88
							53.00	6/15/89
							56.00	7/31/89
							53.00	9/22/89
							55.00	3/09/90
						2-W18-23	26.00	10/06/88
							26.00	1/03/89
							25.00	5/11/89
							28.00	7/24/89
							28.00	9/22/89
							26.00	4/17/90
						2-W18-24	31.00	10/07/88
							26.00	1/04/89
							26.00	5/11/89
							27.00	7/28/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Barium, filtered	H20	WWOS	1000.00	6.00	PPB	2-W18-24	29.00	9/25/89
							25.00	3/15/90
							26.00	4/03/90
						2-W18-26	59.00	1/15/90
						2-W19-15	45.00	1/12/88
							49.00	4/20/88
							44.00	8/17/88
							37.00	12/15/88
							32.00	4/04/90
						2 W19-2	77.00	4/05/90
						2-W19-20	207.00	1/14/88
							233.00	7/22/88
							203.00	12/02/88
							238.00	10/30/89
							231.00	3/20/90
						2-W19-21	16.00	1/22/88
							18.00	8/19/88
							18.00	12/14/88
							19.00	11/02/89
							20.00	4/04/90
						2-W19-24	230.00	1/14/88
							203.00	8/19/88
							161.00	12/12/88
							212.00	10/30/89
							184.00	3/20/90
						2-W19-27	18.00	11/02/89
							16.00	4/06/90
						2-W19-3	38.00	3/04/88
							30.00	7/28/88
							25.00	12/02/88
							24.00	4/04/90
						2-W22-22	15.00	1/15/88
							24.00	8/19/88
							29.00	12/20/88
							31.00	4/05/90
							32.00	4/05/90
						2-W22-26	21.00	8/24/88
							17.00	12/15/88
						2-W6-2	39.00	10/07/88
							35.00	1/04/89
							39.00	5/09/89
							36.00	7/21/89
							39.00	7/21/89
							37.00	9/07/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Barium, filtered	H20	UWQS	1000.00	6.00	PPB	2-W6-2	36.00	1/12/90
							37.00	4/03/90
							38.00	4/03/90
						2-W7-1	34.00	10/04/88
							31.00	12/29/88
							31.00	5/10/89
							31.00	7/10/89
							30.00	9/07/89
							31.00	1/09/90
						2-W7-2	26.00	10/04/88
							30.00	12/29/88
							32.00	3/20/89
							35.00	7/20/89
							39.00	9/07/89
							32.00	1/11/90
						2-W7-3	46.00	10/03/88
							34.00	12/29/88
							35.00	3/20/89
							40.00	7/28/89
							41.00	9/15/89
							35.00	1/17/90
							36.00	1/17/90
						2-W7-4	35.00	10/03/88
							37.00	12/29/88
							38.00	12/29/88
							33.00	3/22/89
							34.00	7/24/89
							38.00	9/13/89
							35.00	1/19/90
						2-W7-5	35.00	10/03/88
							35.00	12/29/88
							40.00	3/17/89
							33.00	7/25/89
							34.00	9/08/89
							33.00	1/11/90
						2-W7-6	41.00	12/30/88
							34.00	3/17/89
							37.00	7/26/89
							24.00	1/11/90
						2-W7-7	39.00	2/27/90
						2-W7-8	36.00	2/27/90
						2-W7-9	43.00	4/19/90
						2-W8-1	37.00	10/04/88
							37.00	12/29/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Barium, filtered	H20	UWQS	1000.00	6.00	PPB	2-U8-1	37.00	5/12/89
							34.00	7/10/89
							35.00	9/12/89
							34.00	1/11/90
						2-U9-1	38.00	10/07/88
							35.00	12/29/88
							36.00	5/12/89
							44.00	7/10/89
							37.00	9/11/89
							46.00	1/09/90
						6-38-45	89.00	8/25/88
							83.00	2/15/90
						6-38-70	82.00	1/06/88
							84.00	5/11/88
							72.00	8/15/88
							84.00	1/13/89
							92.00	4/06/90
						6-39-79	24.00	1/06/88
							23.00	5/23/88
							23.00	8/29/88
							22.00	2/23/89
						6-44-64	50.00	2/08/88
							51.00	5/23/88
							54.00	8/26/88
							48.00	1/12/89
						6-45-69A	23.00	8/26/88
						6-47-60	34.00	2/08/88
							37.00	6/01/88
							39.00	8/26/88
						6-48-71	25.00	8/26/88
						6-49-79	28.00	2/09/88
							29.00	6/07/88
							31.00	8/26/88
							27.00	1/12/89
						6-50-85	29.00	3/23/88
							30.00	6/06/88
							31.00	8/30/88
						6-55-76	24.00	2/12/88
							27.00	6/06/88
							19.00	11/21/88
Carbon Tetrachloride	A61	UWQS	.30	5.00	PPB	2-U10-13	13.00*	10/04/88
							7.00*	1/03/89
							13.00*	3/22/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	PEG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Carbon tetrachloride	A61	WWOS	.30	5.00	PPB	2-W10-13	18.00*	7/25/89
							10.00*	9/13/89
							12.00*	9/13/89
							12.00*	1/10/90
							13.00*	1/24/90
							8.00*	5/04/90
						2-W10-4	2590.00*	3/04/88
							2600.00*	8/23/88
							2800.00*	12/01/88
						2-W10-8	49.00*	11/30/88
						2-W10-9	1700.00*	3/21/88
						-	2300.00*	8/23/88
						2-W11-14	650.00*	6/27/88
							860.00*	11/10/88
							790.00*	4/13/90
						2-W11-7	2080.00*	6/30/88
							2500.00*	11/10/88
						2-W14-2	1050.00*	3/29/88
							980.00*	8/23/88
							920.00*	11/10/88
						2-W15-10	3730.00*	3/02/88
							4200.00*	8/16/88
							3750.00*	11/29/88
						2-W15-12	1500.00*	6/30/88
							1320.00*	11/30/88
							1920.00*	6/05/89
						2-W15-15	430.00*	10/07/88
							440.00*	10/07/88
							264.00*	12/29/88
							440.00*	5/15/89
							380.00*	7/11/89
							543.00*	9/12/89
							800.00*	3/13/90
						2-W15-16	8100.00*	10/06/88
							1780.00*	12/29/88
							6650.00*	5/09/89
							8250.00*	7/25/89
							7100.00*	9/22/89
							8700.00*	3/15/90
							8400.00*	4/03/90
						2-W15-18	2600.00*	10/06/88
							14.00*	12/30/88
							1710.00*	5/15/89
							1580.00*	7/11/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Carbon Tetrachloride	A61	UWQS	.30	5.00	PPB	2-U15-18	189.00*	9/25/89
							1700.00*	3/16/90
						2-U15-19	1500.00*	1/15/90
							710.00*	5/04/90
						2-U15-20	193.00*	1/12/90
							192.00*	5/04/90
						2-U15-24	380.00*	3/13/90
						2-U15-4	2090.00*	3/02/88
							1830.00*	11/29/88
						2-U15-8	130.00*	6/30/88
							1110.00*	5/07/90
						2-U18-15	120.00*	1/08/88
							110.00*	8/17/88
							89.00*	12/01/88
						2-U18-21	130.00*	10/05/88
							92.00*	12/30/88
							146.00*	3/22/89
							139.00*	5/16/89
							148.00*	5/16/89
							138.00*	9/12/89
							180.00*	3/13/90
						2-U18-23	640.00*	10/06/88
							195.00*	1/03/89
							732.00*	5/11/89
							760.00*	8/31/89
							611.00*	9/22/89
							895.00*	4/17/90
							928.00*	4/17/90
							675.00*	5/11/90
						2-U18-24	1400.00*	10/07/88
							575.00*	1/04/89
							945.00*	5/11/89
							650.00*	7/28/89
							737.00*	9/25/89
							810.00*	3/15/90
							600.00*	4/03/90
						2-U18-26	208.00*	1/15/90
							250.00*	5/04/90
						2-U19-1	7.00*	1/02/90
						2-U19-15	66.00*	1/12/88
							63.00*	4/20/88
							82.00*	8/17/88
							83.00*	12/15/88
							127.00*	4/04/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Carbon Tetrachloride	A61	WQOS	.30	5.00	PPB	2-W19-2	22.00*	4/05/90
						2-W19-20	32.00*	1/14/88
							38.00*	7/22/88
							32.00*	12/02/88
							23.00*	10/30/89
							42.00*	3/20/90
						2-W19-24	24.00*	1/14/88
							17.00*	8/19/88
							16.00*	12/12/88
							14.00*	10/30/89
							24.00*	3/20/90
						2-W19-27	7.00*	11/02/89
							13.00*	4/06/90
						2-W19-3	94.00*	3/04/88
							49.00*	7/28/88
							120.00*	12/02/88
						2-W6-2	100.00*	10/07/88
							102.00*	5/09/89
							99.00*	7/21/89
							102.00*	7/21/89
							113.00*	9/07/89
							87.00*	1/12/90
							114.00*	4/03/90
							132.00*	4/03/90
							102.00*	5/10/90
						2-W7-4	220.00*	10/03/88
							222.00*	3/22/89
							220.00*	7/24/89
							189.00*	9/13/89
							200.00*	1/19/90
							278.00*	1/24/90
							158.00*	5/08/90
						2-W7-5	23.00*	10/03/88
							25.00*	12/29/88
							34.00*	3/17/89
							27.00*	7/25/89
							29.00*	9/08/89
							27.00*	1/11/90
							43.00*	1/26/90
							28.00*	5/08/90
						2-W7-8	5.00*	5/03/90
						6-38-70	39.00*	1/06/88
							29.00*	5/11/88
							30.00*	5/11/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Carbon Tetrachloride	A61	WQOS	.30	5.00	PPB	6-38-70	58.00*	4/06/90
						6-39-79	430.00*	1/06/88
							740.00*	5/23/88
							710.00*	8/29/88
							720.00*	8/29/88
							990.00*	8/29/88
							820.00*	2/23/89
							850.00*	2/23/89
							880.00*	2/23/89
Chloride	C75	WQOS	250000.00	500.00	PPB	2-U10-13	20600.00	10/04/88
							21800.00	1/03/89
							22300.00	3/22/89
							22800.00	7/25/89
							23000.00	9/13/89
							23800.00	1/10/90
							32100.00	5/04/90
						2-U10-14	7640.00	10/04/88
							9300.00	1/03/89
							9200.00	3/21/89
							9300.00	7/27/89
							8000.00	9/15/89
							9600.00	1/10/90
							8700.00	5/09/90
						2-U10-15	19400.00	2/25/90
						2-U10-16	23700.00	2/27/90
						2-U10-4	16900.00	3/04/88
							17400.00	8/23/88
							17100.00	12/01/88
						2 U10-8	27700.00	11/30/88
						2 U10-9	21700.00	3/21/88
							20600.00	9/23/88
							21100.00	2/28/90
						2 U11-14	59400.00	6/27/88
							65500.00	11/10/88
							66900.00	4/13/90
						2 U11-23	6400.00	2/28/90
						2-U11-7	52700.00	6/30/88
							45900.00	11/10/88
						2-U14-2	45800.00	3/29/88
							47200.00	8/23/88
							50000.00	11/10/88
						2-U15-10	21800.00	3/02/88
							21400.00	8/16/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloride	C75	WQOS	250000.00	500.00	PPB	2-W15-10	21500.00	11/29/88
							22400.00	5/23/90
							22600.00	5/23/90
						2-W15-12	34200.00	6/30/88
							31000.00	11/30/88
							34500.00	6/05/89
						2-W15-15	2940.00	10/07/88
							2980.00	10/07/88
							3100.00	12/29/88
							3500.00	5/15/89
							3680.00	7/11/89
							3900.00	9/12/89
							3800.00	3/13/90
						2-W15-16	17600.00	10/06/88
							18700.00	12/29/88
							22600.00	5/09/89
							21900.00	7/25/89
							22000.00	9/22/89
							23200.00	3/15/90
							22200.00	4/03/90
						2-W15-17	13700.00	10/05/88
							14100.00	12/30/88
							16000.00	5/31/89
							16000.00	9/27/89
							14800.00	3/12/90
						2-W15-18	3780.00	10/06/88
							3700.00	12/30/88
							38300.00	5/15/89
							4020.00	7/11/89
							4000.00	9/25/89
							4900.00	3/16/90
						2-W15-19	13300.00	1/15/90
							13900.00	5/04/90
						2-W15-20	5000.00	1/12/90
						2-W15-24	3300.00	3/13/90
						2-W15-4	15600.00	3/02/88
							16700.00	11/29/88
						2-W15-8	23500.00	6/30/88
							24600.00	5/07/90
						2-W18-15	3760.00	1/08/88
							3270.00	8/17/88
							3100.00	12/01/88
						2-W18-21	2950.00	10/05/88
							2900.00	12/30/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloride	C75	WQOS	250000.00	500.00	PPB	2-U18-21	2800.00	3/22/89
							3100.00	5/16/89
							3400.00	9/12/89
							3100.00	3/13/90
						2-U18-22	9100.00	10/05/88
							8600.00	12/30/88
							9600.00	6/15/89
							9000.00	7/31/89
							9000.00	9/22/89
							9400.00	3/09/90
						2-U18-23	2840.00	10/06/88
							2800.00	1/03/89
							3100.00	5/11/89
							3340.00	7/24/89
							3300.00	9/22/89
							3200.00	4/17/90
							3200.00	5/11/90
						2-U18-24	3450.00	10/07/88
							3500.00	1/04/89
							3800.00	5/11/89
							4200.00	7/28/89
							4000.00	9/25/89
							4000.00	3/15/90
							4000.00	4/03/90
						2-U18-26	7800.00	1/15/90
							7900.00	5/04/90
						2-U19-1	4800.00	1/02/90
						2-U19-15	25900.00	1/12/88
							27800.00	4/20/88
							20500.00	8/17/88
							18300.00	12/15/88
							28600.00	4/04/90
						2-U19-2	30400.00	4/05/90
						2-U19-20	28700.00	1/14/88
							27100.00	7/22/88
							25400.00	12/02/88
							20000.00	10/30/89
							21400.00	3/20/90
						2-U19-21	1110.00	1/22/88
							873.00	8/19/88
							1000.00	12/14/88
							1400.00	11/02/89
							1200.00	4/04/90
						2-U19-24	25500.00	1/14/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloride	C75	UWOS	250000.00	500.00	PPB	2-W19-24	21900.00	8/19/88
							21000.00	12/12/88
							19000.00	10/30/89
							24700.00	3/20/90
						2-W19-27	1300.00	11/02/89
							1200.00	4/06/90
						2-W19-3	18600.00	3/04/88
							16900.00	7/28/88
							14000.00	12/02/88
							11800.00	4/04/90
						2-W22-22	16500.00	1/15/88
							16100.00	8/19/88
							15900.00	12/20/88
							15500.00	4/05/90
							15600.00	4/05/90
						2-W22-26	3870.00	8/24/88
							3700.00	12/15/88
						2-W6-2	5800.00	10/07/88
							5400.00	1/04/89
							5700.00	5/09/89
							5570.00	7/21/89
							5660.00	7/21/89
							3500.00	9/07/89
							5900.00	1/12/90
							5300.00	4/03/90
							6800.00	4/03/90
							6000.00	5/10/90
						2-W7-1	7250.00	10/04/88
							8100.00	12/29/88
							9000.00	5/10/89
							9620.00	7/10/89
							9000.00	9/07/89
							9700.00	1/09/90
							8900.00	5/08/90
						2-W7-2	4430.00	10/04/88
							3200.00	12/29/88
							3000.00	3/20/89
							3750.00	7/20/89
							9000.00	9/07/89
							4000.00	1/11/90
							4100.00	5/09/90
						2-W7-3	3650.00	10/03/88
							4400.00	12/29/88
							3900.00	3/20/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloride	C75	WQOS	250000.00	500.00	PPB	2-U7-3	4500.00	7/28/89
							4200.00	9/15/89
							4300.00	1/17/90
							4200.00	5/07/90
						2-U7-4	15800.00	10/03/88
							17900.00	12/29/88
							18000.00	12/29/88
							17800.00	3/22/89
							18700.00	7/24/89
							18000.00	9/13/89
							19300.00	1/19/90
							17700.00	5/08/90
						2-U7-5	12200.00	10/03/88
							14000.00	12/29/88
							13500.00	3/17/89
							13900.00	7/25/89
							14000.00	9/08/89
							15800.00	1/11/90
							14300.00	5/08/90
						2-U7-6	5850.00	10/03/88
							5600.00	12/30/88
							6000.00	3/17/89
							6200.00	7/26/89
							5900.00	9/08/89
							6300.00	1/11/90
							5800.00	5/10/90
						2-U7-7	3900.00	2/27/90
							3900.00	5/03/90
						2-U7-8	6000.00	2/27/90
							6100.00	5/03/90
						2-U7-9	14400.00	4/19/90
							14400.00	5/03/90
						2-U8-1	13400.00	10/04/88
							15300.00	12/29/88
							15100.00	5/12/89
							15900.00	7/10/89
							17000.00	9/12/89
							17200.00	1/11/90
							15200.00	5/08/90
						2-U9-1	17700.00	10/07/88
							18500.00	12/29/88
							18600.00	5/12/89
							19400.00	7/10/89
							20000.00	9/11/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	UFLL	RESULT	DATE
Chloride	C75	UWOS	250000.00	500.00	PPB	2-W9-1	20600.00	1/09/90
							17500.00	5/08/90
						6-38-65	12300.00	8/25/88
							13900.00	2/15/90
						6-38-70	32200.00	1/06/88
							28900.00	5/11/88
							25900.00	8/15/88
							27400.00	1/13/89
							26300.00	4/06/90
						6-39-79	3780.00	1/06/88
							3980.00	5/23/88
							3990.00	5/23/88
							4010.00	5/23/88
							3420.00	8/29/88
							3430.00	8/29/88
							3400.00	2/23/89
						6-44-64	11900.00	2/08/88
							13100.00	5/23/88
							10800.00	8/26/88
							11500.00	1/12/89
							9800.00	4/27/90
						6-45-69A	7790.00	8/26/88
							7500.00	4/30/90
						6-47-60	9650.00	2/08/88
							10400.00	6/01/88
							8610.00	8/26/88
						6-48-71	6210.00	8/26/88
						6-49-79	10000.00	2/09/88
							9960.00	6/07/88
							7760.00	8/26/88
							9200.00	1/12/89
						6-50-85	9330.00	3/23/88
							9960.00	6/06/88
							7620.00	8/30/88
						6-55-76	24500.00	2/12/88
							23900.00	6/06/88
							22200.00	11/21/88
Chloroform	A80	UWOS	7.00	5.00	PPB	2-W10-14	7.00*	1/03/89
						2-W10-4	20.00*	3/04/88
							16.00*	8/23/88
							21.00*	12/01/88
						2-W10-9	16.00*	3/21/88
							14.00*	8/23/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloroform	A80	UWQS	7.00	5.00	PPB	2-W11-14	10.00*	11/10/88
						2-W11-7	15.00*	6/30/88
							37.00*	11/10/88
						2-W14-2	9.00*	3/29/88
							7.00*	8/23/88
							12.00*	11/10/88
						2-W15-10	26.00*	3/02/88
							17.00*	8/16/88
							27.00*	11/29/88
						2-W15-12	23.00*	6/30/88
							20.00*	11/30/88
							26.00*	6/05/89
						2-W15-15	5.00	12/29/88
							9.00*	7/11/89
							8.00*	9/12/89
							10.00*	3/13/90
						2-W15-16	36.00*	10/06/88
							33.00*	5/09/89
							52.00*	7/25/89
							42.00*	9/22/89
							71.00*	3/15/90
							68.00*	4/03/90
						2-W15-18	13.00*	10/06/88
							12.00*	5/15/89
							27.00*	7/11/89
							25.00*	3/16/90
						2-W15-19	173.00*	1/15/90
							179.00*	5/04/90
						2-W15-20	9.00*	1/12/90
							11.00*	5/04/90
						2-W15-24	31.00*	3/13/90
						2-W15-4	16.00*	3/02/88
							19.00*	11/29/88
						2-W15-8	1650.00*	6/30/88
							1540.00*	5/07/90
						2-W18-21	5.00	3/13/90
						2-W18-23	5.00	10/06/88
							5.00	5/11/89
							8.00*	8/31/89
							7.00*	9/22/89
							7.00*	4/17/90
							5.00	5/11/90
						2-W18-24	15.00*	10/07/88
							23.00*	1/04/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloroform	A80	UWQS	7.00	5.00	PPB	2-W18-24	16.00*	5/11/89
							13.00*	7/28/89
							17.00*	9/25/89
							22.00*	3/15/90
							23.00*	4/03/90
						2-W18-26	38.00*	1/15/90
							18.00*	5/04/90
						2-W19-20	6.00	3/20/90
						2-W19-24	6.00	3/20/90
						2-W7-4	5.00	10/03/88
							5.00	12/29/88
							5.00	3/22/89
							6.00	7/24/89
							6.00	9/13/89
							5.00	1/19/90
							5.00	1/24/90
							5.00	5/08/90
						6-39-79	5.00	5/23/88
							6.00	8/29/88
							6.00	2/23/89
Chromium, filtered	M22	UWQS	50.00	10.00	PPB	2-W10-13	15.00	10/04/88
						2-W10-14	12.00	10/04/88
						2-W10-15	94.00*	2/25/90
						2-W10-16	41.00	2/27/90
						2-W10-4	65.00*	3/04/88
							65.00*	8/23/88
							63.00*	12/01/88
						2-W10-8	10.00	11/30/88
						2-W10-9	152.00*	3/21/88
							140.00*	8/23/88
							135.00*	2/28/90
						2-W14-2	10.00	11/10/88
						2-W15-10	15.00	3/02/88
							21.00	8/16/88
							16.00	11/29/88
						2-W15-16	11.00	10/06/88
							12.00	12/29/88
							12.00	5/09/89
							12.00	7/25/89
							12.00	3/15/90
						2-W15-18	13.00	10/06/88
							13.00	5/15/89
							26.00	9/25/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chromium, filtered	H22	UWQS	50.00	10.00	PPB	2-U18-21	10.00	12/30/88
						2-U19-24	15.00	12/12/88
						2-U19-3	10.00	3/04/88
						2-U6-2	36.00	10/07/88
							33.00	1/04/89
							39.00	5/09/89
							32.00	7/21/89
							36.00	7/21/89
							41.00	9/07/89
							29.00	1/12/90
							26.00	4/03/90
							59.00*	4/03/90
						2-U7-1	16.00	10/04/88
						2-U7-2	17.00	10/04/88
							12.00	3/20/89
							12.00	7/20/89
							12.00	9/07/89
							11.00	1/11/90
						2-U7-4	18.00	10/03/88
							15.00	12/29/88
							14.00	3/22/89
							11.00	7/24/89
						2-U7-5	15.00	10/03/88
							11.00	12/29/88
							11.00	3/17/89
							10.00	7/25/89
							11.00	1/11/90
						2-U8-1	14.00	10/04/88
							12.00	7/10/89
						2-U9-1	11.00	7/10/89
							11.00	9/11/89
							10.00	1/09/90
Cyanide	C70	PRGUIR	52.00	10.00	PPB	2-U14-2	26.00	3/29/88
							62.50*	8/23/88
							69.00*	11/10/88
						2-U15-8	36.40	6/30/88
							19.60	5/07/90
						6-38-70	22.80	1/06/88
							27.90	4/06/90
						6-44-64	16.00	2/08/88
							14.40	8/26/88
							11.00	1/12/89
							20.10	4/27/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Cyanide	C70	PRGWTR	52.00	10.00	PPB	6-49-79	11.00	6/07/88
Fluoride, Low Detecti	H63	UWOS	4000.00	50.00	PPB	2-U10-4	2830.00	8/23/88
						2-U10-9	4730.00*	8/23/88
						2-U14-2	1110.00	8/23/88
						2-U15-10	383.00	8/16/88
						2-U18-15	279.00	8/17/88
						2-U19-15	420.00	1/12/88
							390.00	4/20/88
							520.00	8/17/88
						2-U19-20	272.00	7/22/88
							339.00	10/30/89
						2-U19-21	231.00	8/19/88
							205.00	11/02/89
						2-U19-24	322.00	8/19/88
							367.00	10/30/89
						2-U19-3	538.00	7/28/88
						2-U22-22	467.00	8/19/88
						2-U22-26	469.00	8/24/88
						6-38-65	262.00	8/25/88
						6-38-70	390.00	1/06/88
							326.00	5/11/88
							410.00	8/15/88
						6-39-79	390.00	1/06/88
							399.00	5/23/88
							384.00	8/29/88
						6-44-64	348.00	2/08/88
							349.00	5/23/88
							356.00	8/26/88
						6-45-69A	359.00	8/26/88
						6-47-60	600.00	6/01/88
							559.00	8/26/88
						6-48-71	430.00	8/26/88
						6-49-79	262.00	2/09/88
							287.00	6/07/88
							282.00	8/26/88
						6-50-85	224.00	3/23/88
							256.00	6/06/88
							239.00	8/30/88
						6-55-76	184.00	2/12/88
							218.00	6/06/88
Gross alpha	212	UWOS	15.00	4.00	PCI/L	2-U10-3	12.90	2/29/88
							12.50	5/19/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross alpha	4212	UWQS	15.00	4.00	PCI/L	2-W10-3	9.25	7/28/88
							9.60	11/17/88
							18.40*	3/08/89
						2-W11-14	265.00*	2/25/88
							233.00*	5/16/88
							273.00*	7/25/88
							255.00*	11/17/88
							173.00*	3/09/89
						2-W11-7	13.20	3/09/89
						2-W18-15	47.70*	1/15/88
							49.20*	5/18/88
							32.50*	8/17/88
							42.20*	11/17/88
							30.80*	3/09/89
						2-W18-21	19.70*	10/05/88
							20.40*	12/30/88
						2-W19-14	4.24	7/22/88
							4.37	11/18/88
						2-W19-15	219.00*	1/12/88
							235.00*	1/12/88
							164.00*	4/20/88
							193.00*	4/20/88
							78.60*	8/17/88
							49.30*	11/18/88
							56.00*	2/13/89
						2-W19-2	91.70*	1/11/88
							83.60*	2/10/88
							97.00*	3/18/88
							75.10*	4/11/88
							103.00*	5/06/88
							114.00*	6/21/88
							114.00*	7/13/88
							94.30*	8/11/88
							84.90*	9/02/88
							91.70*	10/17/88
							95.70*	11/01/88
							94.60*	12/11/88
							76.70*	1/12/89
						2-W19-20	362.00*	1/14/88
							363.00*	2/10/88
							378.00*	3/10/88
							313.00*	4/11/88
							314.00*	5/06/88
							340.00*	6/14/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross alpha	212	UWOS	15.00	4.00	PCI/L	2-W19-20	375.00*	7/22/88
							391.00*	8/10/88
							366.00*	9/01/88
							391.00*	10/17/88
							384.00*	11/01/88
							358.00*	12/11/88
							213.00*	1/11/89
						2-W19-21	16.10*	1/22/88
							15.00*	5/18/88
							13.40	8/19/88
							11.80	1/04/89
						2-W19-24	461.00*	1/14/88
							469.00*	2/10/88
							449.00*	3/21/88
							427.00*	4/11/88
							348.00*	5/06/88
							299.00*	6/14/88
							387.00*	7/25/88
							373.00*	8/10/88
							328.00*	9/01/88
							331.00*	11/03/88
							332.00*	12/11/88
							273.00*	1/12/89
						2-W19-27	7.45	1/11/88
							7.04	5/18/88
							8.51	7/22/88
							9.77	11/30/88
							9.18	2/01/89
						2-W19-3	3100.00*	1/18/88
							2790.00*	3/21/88
							2580.00*	4/11/88
							2970.00*	5/09/88
							2320.00*	5/18/88
							1880.00*	6/14/88
							1770.00*	7/28/88
							1950.00*	7/28/88
							2270.00*	8/10/88
							1760.00*	9/02/88
							1620.00*	10/17/88
							1610.00*	11/03/88
							1760.00*	11/22/88
							1730.00*	12/11/88
							1840.00*	1/13/89
						2-W22-22	6.36	8/19/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross alpha	212	UWQS	15.00	4.00	PCI/L	2-U7-6	8.88	10/03/88
							28.40*	12/30/88
						6-38-70	26.80*	1/06/88
							43.40*	1/08/88
							43.60*	2/09/88
							46.80*	3/17/88
							41.60*	4/07/88
							40.30*	5/09/88
							19.60*	5/11/88
							47.40*	6/06/88
							44.90*	8/12/88
							36.60*	8/15/88
							52.20*	9/08/88
							48.40*	10/12/88
							39.00*	10/31/88
							50.40*	1/05/89
							52.20*	1/11/89
						6-39-79	6.50	1/06/88
							9.29	1/06/88
							7.76	5/23/88
							10.10	5/23/88
							6.82	8/29/88
							8.05	11/11/88
Gross beta	111	UWQS	50.00	8.00	PCI/L	2-U10-1	45.60	2/29/88
							49.30	5/19/88
							32.10	7/28/88
							33.90	11/17/88
							43.70	3/09/89
							46.20	9/26/89
						2 U10-13	10.20	10/04/88
						2 U10-15	45.20	2/26/90
						2 U10-16	17.80	2/27/90
						2-U10 3	92.90*	2/29/88
							87.20*	5/19/88
							28.70	7/28/88
							31.20	11/17/88
							139.00*	3/08/89
							163.00*	9/26/89
						2-U10-4	79.90*	2/25/88
							54.10*	8/31/88
						2-U10-8	17.50	3/16/90
						2-U10-9	49.40	2/28/88
							45.40	8/31/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross beta	111	WMS	50.00	8.00	PCI/L	2-W10-9	49.80	2/28/90
						2-W11-11	54.40*	2/25/88
							53.20*	9/21/88
						2-W11-14	193.00*	2/25/88
							158.00*	5/16/88
							139.00*	7/25/88
							97.90*	11/17/88
							72.80*	3/09/89
							105.00*	8/24/89
							113.00*	4/13/90
						2-W11-15	18.00	2/28/88
							19.70	5/16/88
							22.90	11/17/88
							14.40	3/09/89
						2-W11-18	70.10*	2/25/88
							64.70*	9/21/88
						2-W11-23	13.30	2/28/88
							10.50	9/21/88
						2-W11-24	8.90	9/21/88
						2-W11-7	66.00*	2/26/88
							60.80*	5/16/88
							52.00*	7/27/88
							53.30*	11/17/88
							47.60	3/09/89
							22.00	8/24/89
						2-W14-2	54.40*	2/28/88
							34.50	8/31/88
						2-W15-10	14.00	2/29/88
							12.70	8/16/88
						2-W15-16	11.30	10/06/88
							10.80	7/25/89
						2-W15-17	10.60	12/30/88
							8.30	5/31/89
							8.06	9/27/89
						2-W15-18	8.82	12/30/88
							8.29	9/25/89
						2-W15-19	11.60	1/15/90
							10.30	5/04/90
						2-W15-4	10.10	2/28/88
							8.57	9/26/88
						2-W15-8	38.20	2/26/88
							26.90	5/18/88
							18.80	7/25/88
							28.20	11/17/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross beta	111	UWQS	50.00	8.00	PCI/L	2-U15-8	27.20	3/15/89
							336.00*	5/07/90
						2-U18-15	16.60	1/15/88
							11.10	5/18/88
							16.00	8/17/88
							9.22	11/17/88
						2-U18-21	9.25	3/22/89
						2-U19-1	8.69	1/02/90
						2-U19-14	11.50	1/11/88
							8.34	7/22/88
							9.92	11/18/88
							8.80	2/13/89
						2-U19-15	203.00*	1/12/88
							308.00*	1/12/88
							179.00*	4/20/88
							325.00*	4/20/88
							207.00*	8/17/88
							218.00*	11/18/88
							78.20*	2/13/89
							93.60*	4/04/90
						2-U19-2	117.00*	1/11/88
							129.00*	2/10/88
							113.00*	3/18/88
							111.00*	4/11/88
							138.00*	5/06/88
							149.00*	6/21/88
							135.00*	7/13/88
							124.00*	8/11/88
							132.00*	9/02/88
							139.00*	10/17/88
							149.00*	11/01/88
							163.00*	12/11/88
							93.80*	1/12/89
							66.50*	2/22/89
							124.00*	3/10/89
							102.00*	10/09/89
							70.00*	4/05/90
						2-U19-20	1100.00*	1/14/88
							1360.00*	2/10/88
							1320.00*	3/10/88
							1150.00*	4/11/88
							1230.00*	5/06/88
							1480.00*	6/14/88
							2610.00*	7/22/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross beta	111	UWOS	50.00	8.00	PCI/L	2-U19-20	1150.00*	8/10/88
							1300.00*	9/01/88
							1250.00*	10/17/88
							1350.00*	11/01/88
							1720.00*	12/11/88
							989.00*	1/11/89
							1450.00*	2/17/89
							1080.00*	3/08/89
							1360.00*	10/05/89
							753.00*	10/30/89
							1830.00*	3/20/90
						2-U19-21	8.73	1/22/88
							8.42	5/18/88
							8.69	8/19/88
							11.60	1/04/89
						2-U19-24	1870.00*	1/14/88
							1960.00*	2/10/88
							2300.00*	3/21/88
							2320.00*	4/11/88
							2500.00*	5/06/88
							2990.00*	6/14/88
							3070.00*	7/25/88
							2470.00*	8/10/88
							2910.00*	9/01/88
							3260.00*	11/03/88
							3430.00*	12/11/88
							1850.00*	1/12/89
							2490.00*	2/17/89
							2380.00*	3/08/89
							2270.00*	10/06/89
							1650.00*	10/30/89
							2740.00*	3/20/90
						2-U19-27	13.60	1/11/88
							10.40	5/18/88
							8.99	4/06/90
						2-U19-3	2870.00*	1/18/88
							2790.00*	3/21/88
							2580.00*	4/11/88
							2180.00*	5/09/88
							700.00*	5/18/88
							2110.00*	6/14/88
							670.00*	7/28/88
							2500.00*	7/28/88
							2160.00*	8/10/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross beta	111	WQOS	50.00	8.00	PCI/L	2-U19-3	1710.00*	9/02/88
							1920.00*	10/17/88
							1390.00*	11/03/88
							1850.00*	11/22/88
							2300.00*	12/11/88
							509.00*	1/13/89
							557.00*	2/22/89
							239.00*	3/10/89
							265.00*	4/04/90
						2-U22-26	18.80	3/01/88
							23.30	9/28/88
						2-U6-2	14.00	10/07/88
							12.30	1/04/89
							13.20	5/09/89
							12.30	7/21/89
							15.60	7/21/89
							16.40	9/07/89
							10.20	1/12/90
							10.80	5/10/90
						2-U7-3	8.75	10/03/88
						2-U7-4	14.30	10/03/88
							8.22	12/29/88
							11.90	12/29/88
							15.70	7/24/89
							13.60	9/13/89
							13.30	1/19/90
							12.00	5/08/90
						2-U7-5	11.60	12/29/88
							15.40	3/17/89
							8.21	9/08/89
							9.11	5/08/90
						2-U7-6	11.10	10/03/88
							25.20	12/30/88
							10.10	7/26/89
							13.20	9/08/89
							40.30	1/11/90
							55.10*	5/10/90
						2-U7-8	8.74	5/03/90
						2-U8-1	8.27	5/09/90
						2-U9-1	10.90	10/07/88
							8.49	12/29/88
							9.05	5/12/89
						6-38-65	16.10	3/28/88
							14.50	5/11/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross beta	111	UWOS	50.00	8.00	PCI/L	6-38-65	15.30	8/25/88
							18.50	11/10/88
							20.00	4/18/89
							14.10	11/22/89
						6-38-70	373.00*	1/06/88
							334.00*	1/08/88
							269.00*	2/09/88
							332.00*	3/17/88
							309.00*	4/07/88
							407.00*	5/09/88
							437.00*	5/11/88
							368.00*	6/06/88
							328.00*	8/12/88
							368.00*	8/15/88
							371.00*	9/08/88
							356.00*	10/12/88
							391.00*	10/31/88
							321.00*	1/05/89
							297.00*	1/11/89
							252.00*	2/08/89
							306.00*	3/02/89
							296.00*	10/18/89
							324.00*	4/06/90
						6-44-64	18.60	2/08/88
							21.00	2/08/88
							20.80	5/23/88
							20.90	5/23/88
							21.40	8/26/88
							18.30	11/08/88
							19.60	4/25/89
							18.40	1/03/90
						6-51-63	8.97	4/19/88
							36.20	10/31/88
						6-51-75	8.63	10/31/88
Iodine-129 (Drinking	281	DWS	1.00	1.00	PCI/L	2-W11-14	2.24*	4/13/90
						2-W19-15	1.29*	8/17/88
							2.68*	4/04/90
						2-W19-2	7.10*	4/05/90
						2-W19-20	2.33*	3/20/90
						2-W19-24	1.97*	3/20/90
						2-W19-3	15.50*	5/18/88
							5.58*	4/04/90
						2-W21-1	3.37*	9/27/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Iodine-129 (Drinking	281	DWS	1.00	1.00	PCI/L	2-W22-22	2.04*	4/05/90
							2.18*	4/05/90
						2-W22-7	1.63*	9/27/88
						6-38-65	3.51*	5/11/88
						6-38-70	1.42*	5/11/88
							1.99*	4/06/90
Lead, filtered	H41	UWQS	50.00	5.00	PPB	2-W15-18	6.00	12/30/88
						2-W18-21	5.00	12/30/88
						2-W18-22	5.00	12/30/88
						2-W7-6	7.00	12/30/88
						2-W7-9	5.00	4/19/90
Manganese, filtered	H29	UWQS	50.00	5.00	PPB	2-W10-13	7.00	7/25/89
							7.00	9/13/89
							8.00	1/10/90
						2-W10-14	14.00	10/04/88
							11.00	1/03/89
							6.00	3/21/89
						2-W10-15	7.00	2/25/90
						2-W10-8	5.00	11/30/88
						2-W14-2	6.00	3/29/88
							9.00	11/10/88
						2-W15-17	6.00	10/05/88
						2-W15-18	8.00	9/25/89
						2-W15-20	25.00	1/12/90
						2-W15-24	124.00*	3/13/90
						2-W15-4	10.00	3/02/88
							29.00	11/29/88
						2-W18-21	8.00	12/30/88
							7.00	5/16/89
						2-W18-23	8.00	10/06/88
						2-W18-24	92.00*	1/15/90
						2-W19-15	70.00*	1/12/88
							51.00*	4/20/88
						2-W19-2	39.00	4/05/90
						2-W19-20	17.00	1/14/88
							12.00	7/22/88
							11.00	12/02/88
							7.00	10/30/89
							7.00	3/20/90
						2-W22-22	37.00	1/15/88
							17.00	8/19/88
							19.00	12/20/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Manganese, filtered	H29	UUOS	50.00	5.00	PPB	2-W22-22	10.00	4/05/90
							11.00	4/05/90
						2-W7-1	8.00	10/04/88
							12.00	12/29/88
							13.00	5/10/89
							13.00	7/10/89
							11.00	9/07/89
							11.00	1/09/90
						2-W7-3	233.00*	10/03/88
							111.00*	12/29/88
							153.00*	3/20/89
							164.00*	7/28/89
							150.00*	9/15/89
							128.00*	1/17/90
							132.00*	1/17/90
						2-W7-5	17.00	3/17/89
						2-W7-6	8.00	12/30/88
							19.00	3/17/89
							6.00	7/26/89
						2-W7-8	8.00	2/27/90
						2-W7-9	192.00*	4/19/90
						2-W9-1	5.00	12/29/88
							7.00	5/12/89
							8.00	7/10/89
							9.00	1/09/90
						6-55-76	20.00	2/12/88
							30.00	6/06/88
							15.00	11/21/88
Methylene Chloride	A93	UUOS	5.00	5.00	PPB	2-W10-13	51.00*	1/03/89
						2-W10-14	12.00*	1/03/89
						2-W15-15	4100.00*	12/29/88
						2-W15-18	8.00*	9/25/89
						2-W15-8	980.00*	6/30/88
							144.00*	5/07/90
						2-W18-24	13.00*	1/04/89
						2-W7-1	51.00*	12/29/88
Nitrate	C72	UUOS	45000.00	500.00	PPB	2-W10-13	7940.00	10/04/88
							7800.00	1/03/89
							8100.00	3/22/89
							8000.00	7/25/89
							7700.00	9/13/89
							8600.00	1/10/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate	C72	UWQS	45000.00	500.00	PPB	2-W10-13	51000.00*	5/04/90
						2-W10-14	20800.00	10/04/88
							18500.00	1/03/89
							21100.00	3/21/89
							22200.00	7/27/89
							20400.00	9/15/89
							21900.00	1/10/90
							21400.00	5/09/90
						2-W10-15	292000.00*	2/25/90
						2-W10-16	163000.00*	2/27/90
						2-W10-4	194000.00*	3/04/88
							210000.00*	8/23/88
							222000.00*	12/01/88
						2-W10-8	32200.00	11/30/88
						2-W10-9	356000.00*	3/21/88
							426000.00*	8/23/88
							361000.00*	2/28/90
						2-W11-14	116000.00*	6/27/88
							125000.00*	11/10/88
							123000.00*	4/13/90
						2-W11-23	34000.00	2/28/90
						2-W11-7	215000.00*	4/30/88
							203000.00*	11/10/88
						2-W14-2	65300.00*	3/29/88
							62600.00*	8/23/88
							52100.00*	11/10/88
						2-W15-10	101000.00*	3/02/88
							75700.00*	8/16/88
							66000.00*	11/29/88
							38800.00	5/23/90
							39600.00	5/23/90
						2-W15-12	124000.00*	6/30/88
							116000.00*	11/30/88
							116000.00*	6/05/89
						2-W15-15	4490.00	10/07/88
							4540.00	10/07/88
							5800.00	12/29/88
							10500.00	5/15/89
							13400.00	7/11/89
							15300.00	9/12/89
							26700.00	3/13/90
						2-W15-16	70300.00*	10/06/88
							67500.00*	12/29/88
							70700.00*	5/09/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate	C72	MCLS	45000.00	500.00	PPB	2-W15-16	69800.00*	7/25/89
							67000.00*	9/22/89
							76900.00*	3/15/90
							75400.00*	4/03/90
						2-W15-17	23200.00	10/05/88
							19500.00	12/30/88
							16700.00	5/31/89
							16800.00	9/27/89
							19300.00	3/12/90
						2-W15-18	76400.00*	10/06/88
							71600.00*	12/30/88
							68900.00*	5/15/89
							73500.00*	7/11/89
							72000.00*	9/25/89
							95700.00*	3/16/90
						2-W15-19	82400.00*	1/15/90
							95400.00*	5/04/90
						2-W15-20	8500.00	1/12/90
						2-W15-24	2800.00	3/13/90
						2-W15-4	397000.00*	3/02/88
							662000.00*	11/29/88
						2-W15-8	139000.00*	6/30/88
							71100.00*	5/07/90
						2-W18-15	1420.00	1/08/88
							1570.00	8/17/88
							1200.00	12/01/88
						2-W18-21	2230.00	10/05/88
							2200.00	12/30/88
							2200.00	3/22/89
							2600.00	5/16/89
							3000.00	5/16/89
							2500.00	9/12/89
							2700.00	3/13/90
						2-W18-22	17300.00	10/05/88
							13800.00	12/30/88
							16900.00	6/15/89
							15800.00	7/31/89
							15800.00	9/22/89
							15700.00	3/09/90
						2-W18-23	5620.00	10/06/88
							5800.00	1/03/89
							5700.00	5/11/89
							5870.00	7/24/89
							5800.00	9/22/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL *	RESULT	DATE
Nitrate	C72	WQOS	45000.00	500.00	PPB	2-U18-23	6700.00	4/17/90
							6800.00	4/17/90
							6800.00	5/11/90
						2-U18-24	23700.00	10/07/88
							22000.00	1/04/89
							21700.00	5/11/89
							20700.00	7/28/89
							18700.00	9/25/89
							16300.00	3/15/90
							15600.00	4/03/90
						2-U18-26	8600.00	1/15/90
							5700.00	5/04/90
						2-U19-1	1300.00	1/02/90
						2-U19-15	92800.00*	1/12/88
							107000.00*	4/20/88
							86100.00*	8/17/88
							70300.00*	12/15/88
							109000.00*	4/04/90
						2-U19-2	245000.00*	4/05/90
						2-U19-20	940000.00*	1/14/88
							1010000.00*	7/22/88
							1020000.00*	12/02/88
							1050000.00*	10/30/89
							1050000.00*	3/20/90
						2-U19-21	600.00	12/14/88
							700.00	11/02/89
						2-U19-24	1230000.00*	1/14/88
							1030000.00*	8/19/88
							937000.00*	12/12/88
							980000.00*	10/30/89
							584000.00*	3/20/90
						2-U19-27	900.00	11/02/89
							900.00	4/06/90
						2-U19-3	56100.00*	3/04/88
							43600.00	7/28/88
							39000.00	12/02/88
							27100.00	4/04/90
						2-U22-22	2810.00	1/15/88
							13800.00	8/19/88
							15800.00	12/20/88
							24800.00	4/05/90
							24900.00	4/05/90
						2-U22-26	15000.00	8/24/88
							12800.00	12/15/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate	C72	UWQS	45000.00	500.00	PPB	2-W6-2	80700.00*	10/07/88
							71700.00*	1/04/89
							74900.00*	5/09/89
							73200.00*	7/21/89
							74500.00*	7/21/89
							24600.00	9/07/89
							68200.00*	1/12/90
							71100.00*	4/03/90
							72100.00*	4/03/90
							69500.00*	5/10/90
						2-W7-1	42600.00	10/04/88
							44400.00	12/29/88
							42600.00	5/10/89
							45100.00*	7/10/89
							43000.00	9/07/89
							44700.00	1/09/90
							41700.00	5/08/90
						2-W7-2	27300.00	10/04/88
							23600.00	12/29/88
							29900.00	3/20/89
							25600.00	7/20/89
							42000.00	9/07/89
							27200.00	1/11/90
							26800.00	5/09/90
						2-W7-3	2040.00	10/03/88
							8800.00	12/29/88
							3000.00	3/20/89
							3300.00	7/28/89
							3200.00	9/15/89
							3200.00	1/17/90
							3200.00	5/07/90
						2-W7-4	72300.00*	10/03/88
							74200.00*	12/29/88
							74300.00*	12/29/88
							74200.00*	3/22/89
							77000.00*	7/24/89
							74000.00*	9/13/89
							78800.00*	1/19/90
							73600.00*	5/08/90
						2-W7-5	42400.00	10/03/88
							45400.00*	12/29/88
							43300.00	3/17/89
							44800.00	7/25/89
							45000.00*	9/08/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate	C72	UWQS	45000.00	500.00	PPB	2-U7-5	50300.00*	1/11/90
							48000.00*	5/08/90
						2-U7-6	5690.00	10/03/88
							7000.00	12/30/88
							5300.00	3/17/89
							5600.00	7/26/89
							5900.00	9/08/89
							8400.00	1/11/90
							5400.00	5/10/90
						2-U7-7	10600.00	2/27/90
							11600.00	5/03/90
						2-U7-8	25300.00	2/27/90
							26600.00	5/03/90
						2-U7-9	17300.00	4/19/90
							17800.00	5/03/90
						2-U8-1	29400.00	10/04/88
							29800.00	12/29/88
							28200.00	5/12/89
							30400.00	7/10/89
							30000.00	9/12/89
							29900.00	1/11/90
							27900.00	5/08/90
						2-U9-1	19100.00	10/07/88
							17000.00	12/29/88
							18800.00	5/12/89
							18500.00	7/10/89
							20300.00	9/11/89
							18600.00	1/09/90
							19500.00	5/08/90
						6-38-65	161000.00*	8/25/88
							171000.00*	2/15/90
						6-38-70	239000.00*	1/06/88
							220000.00*	5/11/88
							245000.00*	8/15/88
							237000.00*	1/13/89
							276000.00*	4/06/90
						6-39-79	4000.00	1/06/88
							6170.00	5/23/88
							6220.00	5/23/88
							6360.00	5/23/88
							6050.00	8/29/88
							6060.00	8/29/88
							6120.00	8/29/88
							6300.00	2/23/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate	C72	UWQS	45000.00	500.00	PPB	6-44-64	45800.00*	2/08/88
							53200.00*	5/23/88
							55000.00*	8/26/88
							55000.00*	1/12/89
							53200.00*	4/27/90
						6-45-69A	21400.00	8/26/88
							25600.00	4/30/90
						6-47-60	21700.00	2/08/88
							23000.00	6/01/88
							23500.00	8/26/88
						6-48-71	25100.00	8/26/88
						6-49-79	38100.00	2/09/88
							40100.00	6/07/88
							40800.00	8/26/88
							40600.00	1/12/89
						6-50-85	24900.00	3/23/88
							24600.00	6/06/88
							25800.00	8/30/88
						6-55-76	5980.00	2/12/88
							4370.00	6/06/88
							4400.00	11/21/88
Nitrate, High Detecti	H65	UWQS	45000.00	2500.00	PPB	2-W10-1	550000.00*	2/01/88
							456000.00*	7/28/88
						2-W10-3	926000.00*	2/29/88
							661000.00*	7/28/88
						2-W10-4	209000.00*	2/25/88
							214000.00*	8/31/88
						2-W10-5	104000.00*	2/25/88
							93400.00*	9/26/88
						2-W10-8	2720.00	2/28/88
							58900.00*	9/14/88
						2-W10-9	396000.00*	2/28/88
							371000.00*	8/31/88
						2-W11-23	113000.00*	2/28/88
							757000.00*	9/21/88
						2-W11-24	163000.00*	2/28/88
							148000.00*	9/21/88
						2-W11-3	85900.00*	2/25/88
							82700.00*	9/26/88
						2-W11-9	56400.00*	2/25/88
						2-W12-1	377000.00*	2/25/88
							331000.00*	9/26/88
						2-W14-2	74500.00*	2/28/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate, High Detecti	H65	WQOS	45000.00	2500.00	PPB	2-U14-2	51400.00*	8/31/88
						2-U15-10	114000.00*	2/29/88
							79200.00*	8/16/88
						2-U15-4	399000.00*	2/28/88
							699000.00*	9/26/88
						2-U18-3	115000.00*	2/22/88
							113000.00*	9/27/88
						2-U19-14	10400.00	1/11/88
							3540.00	4/20/88
							8450.00	7/22/88
							10100.00	11/18/88
							11700.00	2/13/89
						2-U19-15	93400.00*	1/12/88
							103000.00*	4/20/88
							84100.00*	8/17/88
							71700.00*	11/18/88
							68600.00*	2/13/89
						2-U19-2	293000.00*	1/11/88
							222000.00*	2/10/88
							340000.00*	3/18/88
							323000.00*	4/11/88
							270000.00*	5/06/88
							241000.00*	6/21/88
							263000.00*	7/13/88
							265000.00*	8/11/88
							270000.00*	9/02/88
							246000.00*	10/17/88
							234000.00*	11/01/88
							226000.00*	12/11/88
							324000.00*	1/12/89
							199000.00*	2/22/89
							180000.00*	3/10/89
							101000.00*	10/09/89
						2-U19-20	941000.00*	1/14/88
							827000.00*	2/10/88
							1010000.00*	3/10/88
							935000.00*	4/11/88
							957000.00*	5/06/88
							1000000.00*	6/14/88
							1060000.00*	7/22/88
							1010000.00*	8/10/88
							1110000.00*	9/01/88
							1050000.00*	10/17/88
							1020000.00*	11/01/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate, High Detecti	H65	UWOS	45000.00	2500.00	PPB	2-W19-20	1070000.00*	12/11/88
							1080000.00*	1/11/89
							1080000.00*	2/17/89
							1030000.00*	3/08/89
							1110000.00*	10/05/89
						2-W19-24	1220000.00*	1/14/88
							1100000.00*	2/10/88
							1270000.00*	3/21/88
							1170000.00*	4/11/88
							1120000.00*	5/06/88
							1090000.00*	6/14/88
							1050000.00*	7/25/88
							1000000.00*	8/10/88
							1050000.00*	9/01/88
							976000.00*	11/03/88
							854000.00*	12/11/88
							946000.00*	1/12/89
							952000.00*	2/17/89
							927000.00*	3/08/89
							1040000.00*	10/06/89
						2-W19-27	2580.00	1/11/88
						2-W19-3	60300.00*	1/18/88
							57900.00*	3/21/88
							51900.00*	4/11/88
							46600.00*	5/09/88
							45400.00*	6/14/88
							43100.00	7/28/88
							42500.00	8/10/88
							39800.00	9/02/88
							37800.00	10/17/88
							36900.00	11/03/88
							40900.00	12/11/88
							37000.00	1/13/89
							21900.00	2/22/89
							24100.00	3/10/89
						2-W21-1	40700.00	2/22/88
							38700.00	9/27/88
						2-W22-22	8740.00	5/17/88
							12800.00	8/19/88
							15700.00	12/20/88
							16900.00	2/01/89
						2-W22-26	13500.00	3/01/88
							18700.00	9/28/88
						6-38-65	153000.00*	3/28/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate, High Detecti	H65	UWQS	45000.00	2500.00	PPB	6-38-65	159000.00*	5/11/88
							159000.00*	8/25/88
							166000.00*	11/10/88
							167000.00*	4/18/89
							21800.00	11/22/89
						6-38-70	217000.00*	1/08/88
							214000.00*	5/11/88
							230000.00*	11/10/88
							243000.00*	4/18/89
						6-39-79	4220.00	1/06/88
							6020.00	5/23/88
							5420.00	8/29/88
							9700.00	11/11/88
						6-44-64	46100.00*	2/08/88
							53400.00*	5/23/88
							54100.00*	8/26/88
							55100.00*	11/08/88
							57500.00*	4/25/89
							65200.00*	1/03/90
						6-45-69A	21000.00	2/10/88
							20900.00	5/23/88
							20300.00	8/26/88
							20800.00	11/14/88
							21700.00	4/10/89
							23100.00	1/04/90
						6-47-60	19500.00	2/08/88
							22500.00	6/01/88
							22300.00	8/26/88
							23200.00	11/15/88
							23300.00	4/07/89
							23200.00	1/04/90
						6-48-71	19700.00	2/12/88
							22200.00	5/25/88
							23100.00	8/26/88
							23500.00	11/14/88
							23700.00	4/25/89
							22700.00	12/08/89
						6-49-79	35700.00	2/09/88
							38400.00	6/07/88
							40600.00	8/26/88
							41800.00	11/11/88
							41200.00	4/21/89
							41500.00	10/20/89
						6-50-85	22000.00	2/19/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate, High Detecti	N65	UWOS	45000.00	2500.00	PPB	6-50-85	22800.00	6/06/88
							24900.00	8/30/88
							25100.00	10/31/88
							25000.00	4/21/89
							25500.00	10/20/89
						6-51-63	17600.00	3/06/88
							17100.00	4/19/88
							15100.00	7/20/88
							14700.00	10/31/88
							18900.00	4/21/89
							18900.00	12/06/89
						6-51-75	2630.00	2/12/88
							2700.00	4/21/89
						6-55-76	6240.00	2/12/88
							3360.00	6/06/88
							5400.00	11/11/88
							3500.00	1/04/90
Radium	181	UWOS	3.00	1.00	PCI/L	2-W10-15	1.84	2/26/90
						2-W10-16	1.96	2/27/90
						2-W10-8	6.42*	3/16/90
						2-W15-12	2.44	6/30/88
						2-W15-8	1.48	6/30/88
						2-W19-1	1.01	1/02/90
						2-W7-6	1.75	10/03/88
							4.01*	12/30/88
							1.47	3/17/89
							4.13*	7/26/89
							7.72*	9/08/89
							10.10*	1/11/90
Sulfate	C73	UWOS	250000.00	500.00	PPB	2-W10-13	22800.00	10/04/88
							22300.00	1/03/89
							22800.00	3/22/89
							23600.00	7/25/89
							22200.00	9/13/89
							23800.00	1/10/90
							42900.00	5/04/90
						2-W10-14	24900.00	10/04/88
							25000.00	1/03/89
							25200.00	3/21/89
							26400.00	7/27/89
							23800.00	9/15/89
							26200.00	1/10/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	WQS	250000.00	500.00	PPB	2-W10-14	25400.00	5/09/90
						2-W10-15	66300.00	2/25/90
						2-W10-16	56500.00	2/27/90
						2-W10-4	53800.00	3/04/88
							53200.00	8/23/88
							54200.00	12/01/88
						2-W10-8	120000.00	11/30/88
						2-W10-9	63500.00	3/21/88
							65600.00	8/23/88
							59800.00	2/28/90
						2-W11-14	64900.00	6/27/88
							74200.00	11/10/88
							76100.00	4/13/90
						2-W11-23	142000.00	2/28/90
						2-W11-7	46300.00	6/30/88
							47300.00	11/10/88
						2-W14-2	51000.00	3/29/88
							46500.00	8/23/88
							47700.00	11/10/88
						2-W15-10	45000.00	3/02/88
							44800.00	8/16/88
							49200.00	11/29/88
							41400.00	5/23/90
							41600.00	5/23/90
						2-W15-12	56700.00	6/30/88
							58000.00	11/30/88
							59300.00	6/05/89
						2-W15-15	14400.00	10/07/88
							14500.00	10/07/88
							14300.00	12/29/88
							14600.00	5/15/89
							15600.00	7/11/89
							14900.00	9/12/89
							17300.00	3/13/90
						2-W15-16	64500.00	10/06/88
							64800.00	12/29/88
							69100.00	5/09/89
							70200.00	7/25/89
							67000.00	9/22/89
							74600.00	3/15/90
							73300.00	4/03/90
						2-W15-17	33600.00	10/05/88
							34000.00	12/30/88
							41500.00	5/31/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	WQOS	250000.00	500.00	PPB	2-W15-17	37000.00	9/27/89
							30800.00	3/12/90
						2-W15-18	22600.00	10/06/88
							21700.00	12/30/88
							21500.00	5/15/89
							23000.00	7/11/89
							20000.00	9/25/89
							21200.00	3/16/90
						2-W15-19	30300.00	1/15/90
							32100.00	5/04/90
						2-W15-20	15900.00	1/12/90
						2-W15-24	12900.00	3/13/90
						2-W15-4	37800.00	3/02/88
							38900.00	11/29/88
						2-W15-8	50300.00	6/30/88
							40700.00	5/07/90
						2-W18-15	12800.00	1/08/88
							12900.00	8/17/88
							12500.00	12/01/88
						2-W18-21	15200.00	10/05/88
							14400.00	12/30/88
							14000.00	3/22/89
							14400.00	5/16/89
							14700.00	9/12/89
							14900.00	3/13/90
						2-W18-22	20100.00	10/05/88
							18900.00	12/30/88
							19600.00	6/15/89
							18800.00	7/31/89
							18000.00	9/22/89
							18700.00	3/09/90
						2-W18-23	15800.00	10/06/88
							14800.00	1/03/89
							15600.00	5/11/89
							16000.00	7/24/89
							15000.00	9/22/89
							16300.00	4/17/90
							16500.00	4/17/90
							16100.00	5/11/90
							16300.00	5/11/90
						2-W18-24	21800.00	10/07/88
							20300.00	1/04/89
							20500.00	5/11/89
							21200.00	7/28/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	WQS	250000.00	500.00	PPB	2-U18-24	19300.00	9/25/89
							20100.00	3/15/90
							19500.00	4/03/90
						2-U18-26	22100.00	1/15/90
							21000.00	5/04/90
						2-U19-1	39200.00	1/02/90
						2-U19-15	60400.00	1/12/88
							71200.00	4/20/88
							54100.00	8/17/88
							42500.00	12/15/88
							68600.00	4/04/90
						2-U19-2	40000.00	4/05/90
						2-U19-20	52800.00	1/14/88
							61400.00	7/22/88
							65300.00	12/02/88
							65000.00	10/30/89
							66200.00	3/20/90
						2-U19-21	10900.00	1/22/88
							11400.00	8/19/88
							12100.00	12/14/88
							13200.00	11/02/89
							9600.00	4/04/90
						2-U19-24	57000.00	1/14/88
							69500.00	8/19/88
							69700.00	12/12/88
							64000.00	10/30/89
							71800.00	3/20/90
						2-U19-27	11500.00	11/02/89
							11400.00	4/06/90
						2 U19-3	42000.00	3/04/88
							36700.00	7/28/88
							33400.00	12/02/88
							29100.00	4/04/90
						2-U22 22	17900.00	1/15/88
							27100.00	8/19/88
							29000.00	12/20/88
							33800.00	4/05/90
							33900.00	4/05/90
						2-U22-26	20300.00	8/24/88
							15200.00	12/15/88
						2-U6-2	26800.00	10/07/88
							25300.00	1/04/89
							26500.00	5/09/89
							27000.00	7/21/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	WQS	250000.00	500.00	PPB	2-W6-2	27200.00	7/21/89
							25700.00	9/07/89
							27900.00	1/12/90
							28000.00	4/03/90
							28300.00	4/03/90
							28000.00	5/10/90
						2-W7-1	49500.00	10/04/88
							50000.00	12/29/88
							49200.00	5/10/89
							51700.00	7/10/89
							50000.00	9/07/89
							52300.00	1/09/90
							49300.00	5/08/90
						2-W7-2	28200.00	10/04/88
							25200.00	12/29/88
							24400.00	3/20/89
							26400.00	7/20/89
							50000.00	9/07/89
							27300.00	1/11/90
							27100.00	5/09/90
						2-W7-3	23800.00	10/03/88
							26000.00	12/29/88
							24200.00	3/20/89
							25500.00	7/28/89
							23000.00	9/15/89
							25500.00	1/17/90
							25600.00	1/17/90
							24300.00	5/07/90
						2-W7-4	31800.00	10/03/88
							30300.00	12/29/88
							30700.00	12/29/88
							32000.00	3/22/89
							32200.00	7/24/89
							31000.00	9/13/89
							33800.00	1/19/90
							30900.00	5/08/90
						2-W7-5	27500.00	10/03/88
							27600.00	12/29/88
							27500.00	3/17/89
							28300.00	7/25/89
							28000.00	9/08/89
							29600.00	1/11/90
							28400.00	5/08/90
						2-W7-6	29900.00	10/03/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	WQS	250000.00	500.00	PPB	2-U7-6	45100.00	12/30/88
							27700.00	3/17/89
							32400.00	7/26/89
							35000.00	9/08/89
							35200.00	1/11/90
							32200.00	5/10/90
						2-U7-7	19700.00	2/27/90
							19700.00	5/03/90
						2-U7-8	23800.00	2/27/90
							23800.00	5/03/90
						2-U7-9	52700.00	4/19/90
							50800.00	5/03/90
						2-U8-1	45100.00	10/04/88
							45700.00	12/29/88
							45300.00	5/12/89
							49000.00	7/10/89
							48000.00	9/12/89
							49000.00	1/11/90
							45300.00	5/08/90
						2-U9-1	49800.00	10/07/88
							49000.00	12/29/88
							49600.00	5/12/89
							49400.00	7/10/89
							52000.00	9/11/89
							51400.00	1/09/90
							48000.00	5/08/90
						6-38-65	30400.00	8/25/88
							31400.00	2/15/90
						6-38-70	48400.00	1/06/88
							46000.00	5/11/88
							45700.00	8/15/88
							51200.00	1/13/89
							56300.00	4/06/90
						6-39-79	15300.00	1/06/88
							16200.00	5/23/88
							16300.00	5/23/88
							15800.00	8/29/88
							15800.00	2/23/89
						6-44-64	28500.00	2/08/88
							31600.00	5/23/88
							28500.00	8/26/88
							35200.00	1/12/89
							27700.00	4/27/90
						6-45-69A	41500.00	8/26/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	UWOS	250000.00	500.00	PPB	6-45-69A	34800.00	4/30/90
						6-47-60	46300.00	2/08/88
							45300.00	6/01/88
							42400.00	8/26/88
						6-48-71	29600.00	8/26/88
						6-49-79	42200.00	2/09/88
							43300.00	6/07/88
							45700.00	8/26/88
							45400.00	1/12/89
						6-50-85	20800.00	3/23/88
							19600.00	6/06/88
							20500.00	8/30/88
						6-55-76	47300.00	2/12/88
							43000.00	6/06/88
							48100.00	11/21/88
Technetium-99	197	DWS	900.00	15.00	PCI/L	2-W10-1	514.00	2/01/88
							500.00	7/28/88
						2-W10-13	24.90	10/04/88
							24.20	1/03/89
							19.80	3/22/89
							19.00	7/25/89
							17.30	9/13/89
							19.20	1/10/90
						2-W11-18	558.00	2/25/88
							15.40	9/21/88
						2-W14-2	351.00	2/28/88
							247.00	8/31/88
						2-W15-16	18.70	10/06/88
							15.40	12/29/88
						2-W15-17	17.00	10/05/88
							16.00	3/12/90
						2-W15-18	27.40	5/15/89
						2-W15-19	31.40	1/15/90
						2-W15-4	46.00	2/28/88
							49.20	9/26/88
						2-W18-24	46.00	5/11/89
						2-W18-3	20.40	2/22/88
						2-W19-1	24.40	2/26/88
							46.70	9/27/88
							29.90	1/02/90
						2-W19-15	951.00*	1/12/88
							1030.00*	4/20/88
							802.00	8/17/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Technetium-99	197	DWS	900.00	15.00	PCI/L	2-W19-15	802.00	11/18/88
							657.00	2/13/89
						2-W19-20	10600.00*	1/14/88
							11400.00*	2/10/88
							11900.00*	3/10/88
							11000.00*	4/11/88
							10800.00*	5/06/88
							12900.00*	6/14/88
							13000.00*	7/22/88
							11900.00*	8/10/88
							11600.00*	9/01/88
							15100.00*	10/17/88
							15500.00*	11/01/88
							16800.00*	12/11/88
							14000.00*	1/11/89
							15300.00*	2/17/89
							17700.00*	3/08/89
							25400.00*	10/05/89
						2-W19-24	20600.00*	1/14/88
							21900.00*	2/10/88
							22200.00*	3/21/88
							23600.00*	4/11/88
							26200.00*	5/06/88
							26600.00*	6/14/88
							27500.00*	7/25/88
							21800.00*	8/10/88
							27100.00*	9/01/88
							35700.00*	11/03/88
							37300.00*	12/11/88
							34100.00*	1/12/89
							27.20	2/17/89
							39000.00*	3/08/89
							41000.00*	10/06/89
						2-W19-3	1280.00*	3/21/88
							1240.00*	4/11/88
							1170.00*	5/09/88
							1120.00*	6/14/88
							1220.00*	7/28/88
							890.00	8/10/88
							1020.00*	9/02/88
							979.00*	10/17/88
							1150.00*	11/03/88
							1010.00*	12/11/88
							881.00	1/13/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Technetium-99	197	DWS	900.00	15.00	PCI/L	2-W19-3	713.00	3/10/89
						2-W6-2	107.00	10/07/88
							97.50	1/04/89
							78.80	5/09/89
							82.00	7/21/89
							83.30	7/21/89
							85.90	9/07/89
							69.40	1/12/90
						2-W7-4	79.90	10/03/88
							77.20	12/29/88
							81.20	12/29/88
							76.70	3/22/89
							68.70	7/24/89
							68.50	9/13/89
							65.20	1/19/90
						2-W7-5	36.10	10/03/88
							39.40	12/29/88
							36.80	3/17/89
							19.80	7/25/89
							26.60	9/08/89
							35.60	1/11/90
						2-W8-1	15.10	10/04/88
							18.10	12/29/88
							16.30	5/12/89
							16.30	7/10/89
							17.20	1/11/90
						2-W9-1	19.20	10/07/88
							16.10	5/12/89
							17.70	7/10/89
						6-38-65	92.40	2/15/90
						6-38-70	2630.00*	1/08/88
							3570.00*	2/09/88
							2830.00*	3/17/88
							3510.00*	4/07/88
							3390.00*	5/09/88
							3450.00*	6/06/88
							2380.00*	8/12/88
							3400.00*	8/15/88
							3530.00*	9/08/88
							3630.00*	10/12/88
							3710.00*	10/31/88
							3680.00*	1/05/89
							3440.00*	1/11/89
							2370.00*	2/08/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Technetium-99	197	OWS	900.00	15.00	PCI/L	6-38-70	3890.00*	3/02/89
							4230.00*	10/18/89
Trichloroethylene	A69	UWOS	3.00	5.00	PPB	2-U10-4	23.00*	3/04/88
							28.00*	8/23/88
							22.00*	12/01/88
						2-U10-9	15.00*	3/21/88
							19.00*	8/23/88
						2-U11-7	6.00*	6/30/88
							7.00*	11/10/88
						2-U14-2	11.00*	3/29/88
							12.00*	8/23/88
							8.00*	11/10/88
						2-U15-10	7.00*	3/02/88
							8.00*	8/16/88
							8.00*	11/29/88
						2-U15-12	8.00*	6/30/88
							8.00*	11/30/88
							10.00*	6/05/89
						2-U15-16	6.00*	10/06/88
							5.00*	5/09/89
							6.00*	7/25/89
							7.00*	9/22/89
							8.00*	3/15/90
							9.00*	4/03/90
						2-U15-4	11.00*	3/02/88
							12.00*	11/29/88
						2-U7-7	6.00*	5/03/90
						6-38-70	8.00*	4/06/90
Tritium	108	UWOS	20000.00	500.00	PCI/L	2-U10-1	54800.00*	2/01/88
							53700.00*	7/28/88
						2-U10-15	60600.00*	2/26/90
						2-U10-16	53200.00*	2/27/90
						2-U10-3	118000.00*	2/29/88
							107000.00*	7/28/88
						2-U10-4	88500.00*	2/25/88
							76300.00*	8/31/88
						2-U10-5	9810.00	2/25/88
							9310.00	9/26/88
						2-U10-8	2730.00	2/28/88
							3240.00	9/14/88
							4090.00	3/16/90
						2-U10-9	65000.00*	2/28/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Tritium	108	WQOS	20000.00	500.00	PCI/L	2-W10-9	59000.00*	8/31/88
							57900.00*	2/28/90
						2-W11-14	6890.00	4/13/90
						2-W11-23	1080.00	2/28/90
						2-W11-3	560.00	9/26/88
						2-W11-9	2740.00	2/25/88
						2-W12-1	5650.00	2/25/88
							6730.00	9/26/88
						2-W14-2	80300.00*	2/28/88
							51200.00*	8/31/88
						2-W15-10	7110.00	2/29/88
							4840.00	8/16/88
						2-W15-15	680.00	10/07/88
						2-W15-16	33700.00*	9/22/89
						2-W15-4	155000.00*	2/28/88
							202000.00*	9/26/88
						2-W18-21	734.00	5/16/89
						2-W18-22	1150.00	6/15/89
							1090.00	9/22/89
						2-W18-23	615.00	9/22/89
						2-W19-15	1010.00	1/12/88
							1080.00	4/20/88
							947.00	8/17/88
							1010.00	11/18/88
							2770.00	2/13/89
							779.00	4/04/90
						2-W19-2	68300.00*	1/11/88
							75100.00*	4/11/88
							57200.00*	7/13/88
							51100.00*	10/17/88
							77400.00*	1/12/89
							24700.00*	10/09/89
							53900.00*	4/05/90
						2-W19-20	2430.00	1/14/88
							1520.00	2/10/88
							1520.00	3/10/88
							1770.00	4/11/88
							3130.00	5/06/88
							1860.00	6/14/88
							1530.00	7/22/88
							1350.00	8/10/88
							1760.00	9/01/88
							1630.00	10/17/88
							1530.00	11/01/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Tritium	108	WWOS	20000.00	500.00	PCI/L	2-U19-20	1800.00	12/11/88
							1850.00	1/11/89
							2540.00	2/17/89
							3760.00	3/08/89
							2630.00	10/05/89
							1960.00	10/30/89
						2-U19-24	1770.00	1/14/88
							1880.00	2/10/88
							1950.00	3/21/88
							2020.00	4/11/88
							2550.00	5/06/88
							2380.00	6/14/88
							1830.00	7/25/88
							1780.00	8/10/88
							1790.00	9/01/88
							943.00	11/03/88
							2190.00	12/11/88
							1610.00	1/12/89
							1500.00	2/17/89
							2820.00	3/08/89
							1440.00	10/06/89
							1260.00	10/30/89
						2-U19-3	817.00	4/11/88
							602.00	7/28/88
							524.00	11/22/88
							950.00	4/04/90
						2-U21-1	90400.00*	2/22/88
							82100.00*	9/27/88
						2-U22-22	1810.00	1/15/88
							1440.00	5/17/88
							1480.00	12/20/88
							1400.00	2/01/89
							1040.00	4/05/90
							1080.00	4/05/90
						2-U22-26	86500.00*	3/01/88
							132000.00*	9/28/88
						2-U22-7	364000.00*	2/22/88
							335000.00*	9/27/88
						2-U6-2	15200.00	10/07/88
							10500.00	1/04/89
							13500.00	5/09/89
							14000.00	7/21/89
							14500.00	7/21/89
							14300.00	9/07/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Tritium	108	WWOS	20000.00	500.00	PCI/L	2-W6-2	14200.00	1/12/90
							15800.00	5/10/90
						2-W7-4	850.00	10/03/88
							653.00	1/19/90
						2-W7-5	886.00	10/03/88
						2-W7-6	1050.00	10/03/88
							590.00	12/30/88
							842.00	3/17/89
							918.00	7/26/89
							914.00	9/08/89
							719.00	1/11/90
						2-W7-8	517.00	5/03/90
						6-38-65	397000.00*	3/28/88
							397000.00*	5/11/88
							399000.00*	8/25/88
							419000.00*	11/10/88
							440000.00*	4/18/89
							452000.00*	11/22/89
							438000.00*	2/15/90
						6-38-70	1460.00	1/08/88
							1170.00	5/11/88
							914.00	11/10/88
							1010.00	4/18/89
							1010.00	4/06/90
						6-44-64	647.00	2/08/88
							511.00	5/23/88
							590.00	8/26/88
							625.00	11/08/88
							652.00	4/25/89
							814.00	1/03/90
							814.00	4/27/90
						6-55-76	525.00	11/21/88
Uranium	104	DWS	40.00	.50	PCI/L	2-W10-1	2.18	2/01/88
							1.84	7/28/88
						2-W10-13	.67	1/03/89
							.70	3/22/89
							.68	7/25/89
							.70	9/13/89
							1.22	5/04/90
						2-W10-14	.79	1/03/89
							.69	3/21/89
							.79	7/27/89
							.60	9/15/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Uranium	104	DWS	40.00	.50	PCI/L	2-W10-14	.52	5/09/90
						2-W10-3	14.80	2/29/88
							7.38	7/28/88
						2-W10-4	.99	2/25/88
							.74	8/31/88
						2-W10-8	1.04	2/28/88
							1.15	9/14/88
						2-W10-9	2.38	2/28/88
							1.94	8/31/88
						2-W11-14	207.00*	4/13/90
						2-W11-3	.72	2/25/88
							1.29	9/26/88
						2-W11-9	1.08	2/25/88
						2-W14-2	1.07	2/28/88
							.95	8/31/88
						2-W15-15	3.62	12/29/88
							3.64	5/15/89
							2.33	7/11/89
							3.17	9/12/89
							2.73	3/13/90
						2-W15-16	1.88	12/29/88
							3.52	5/09/89
							1.41	7/25/89
							2.01	9/22/89
							2.35	3/15/90
						2-W15-17	.55	5/31/89
							.69	9/27/89
							.65	3/12/90
						2-W15-18	.80	12/30/88
							.75	5/15/89
							.57	7/11/89
							.69	9/25/89
						2-W15-19	1.39	1/15/90
							.61	5/04/90
						2-W15-20	.53	1/12/90
							1.65	5/04/90
						2-W15-24	.67	3/13/90
						2-W15-4	2.70	2/28/88
							4.51	9/26/88
						2-W18-21	22.10	12/30/88
							23.20	3/22/89
							20.80	5/16/89
							24.00	9/12/89
							14.20	3/13/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Uranium	104	DWS	40.00	.50	PCI/L	2-W18-22	.56	12/30/88
							.64	6/15/89
							.51	7/31/89
							.88	9/22/89
							.55	3/09/90
						2-W18-23	.98	1/03/89
							1.10	5/11/89
							1.41	7/24/89
							.99	9/22/89
							.61	4/17/90
							2.11	4/17/90
							.91	5/11/90
							1.09	5/11/90
						2-W18-24	.77	1/04/89
							1.10	5/11/89
							.87	7/28/89
							.71	9/25/89
							.64	3/15/90
						2-W18-26	2.13	1/15/90
							1.41	5/04/90
						2-W19-1	4.39	1/02/90
						2-W19-15	27.70	4/04/90
						2-W19-2	8.80	4/05/90
						2-W19-20	2.04	10/30/89
						2-W19-21	15.10	11/02/89
							20.90	4/04/90
						2-W19-24	397.00*	10/30/89
						2-W19-27	8.57	11/02/89
							8.34	4/06/90
						2-W19-3	737.00*	4/04/90
						2-W21-1	1.47	2/22/88
							1.46	9/27/88
						2-W22-26	3.90	3/01/88
							4.71	9/28/88
						2-W22-7	.73	2/22/88
							1.48	9/27/88
						2-W6-2	.96	1/04/89
							.83	5/09/89
							1.39	7/21/89
							1.50	7/21/89
							1.11	9/07/89
							.86	1/12/90
						2-W7-1	.54	12/29/88
							.50	5/10/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Uranium	104	DWS	40.00	.50	PCI/L	2-W7-1	.62	7/10/89
						2-W7-2	.80	12/29/88
							.90	3/20/89
							.56	7/20/89
							.71	9/07/89
							.77	1/11/90
							.56	5/09/90
						2-W7-3	.84	12/29/88
							.95	3/20/89
							1.52	7/28/89
							1.01	9/15/89
							.68	1/17/90
							.89	1/17/90
							1.05	5/07/90
						2-W7-4	1.60	12/29/88
							1.61	12/29/88
							1.28	3/22/89
							1.17	7/24/89
							1.40	9/13/89
							1.57	1/19/90
							1.02	5/08/90
						2-W7-5	1.04	12/29/88
							.98	3/17/89
							1.19	7/25/89
							1.18	9/08/89
							.91	1/11/90
							3.45	5/08/90
						2-W7-6	4.33	12/30/88
							1.86	3/17/89
							3.85	7/26/89
							7.57	9/08/89
							10.10	1/11/90
						2-W7-7	.74	2/27/90
							.64	5/03/90
						2-W7-8	.77	2/27/90
							1.05	5/03/90
						2-W7-9	1.60	4/19/90
							.78	5/03/90
						2-W8-1	.67	12/29/88
							.69	5/12/89
							.85	7/10/89
							.58	9/12/89
							.57	1/11/90
							1.44	5/09/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Uranium	104	DWS	40.00	.50	PCI/L	2-W9-1	1.08	12/29/88
							1.08	5/12/89
							.85	7/10/89
							.88	9/11/89
							.62	1/09/90
						6-38-65	1.74	3/28/88
							1.54	5/11/88
							2.18	8/25/88
							1.65	11/10/88
							1.46	2/15/90
						6-44-64	.96	4/27/90
						6-45-69A	.69	4/30/90
						6-47-60	2.28	2/08/88
							1.81	6/01/88
							1.79	8/26/88
							2.10	11/15/88
							1.88	4/07/89
							1.44	1/04/90
						6-51-63	1.27	3/06/88
							1.12	4/19/88
							1.32	7/20/88
							1.14	10/31/88
							5.90	4/21/89
							1.81	12/06/89
Zinc, filtered	H18	WWDS	5000.00	5.00	PPB	2-W10-13	25.00	10/04/88
							9.00	9/13/89
							839.00	9/13/89
						2-W10-14	31.00	10/04/88
							59.00	1/03/89
							12.00	3/21/89
							7.00	7/27/89
							6.00	9/15/89
							7.00	1/10/90
						2-W10-15	10.00	2/25/90
						2-W10-16	19.00	2/27/90
						2-W10-4	7.00	12/01/88
						2-W10-9	17.00	2/28/90
						2-W11-23	5.00	2/28/90
						2-W15-10	5.00	11/29/88
						2-W15-15	29.00	10/07/88
							34.00	10/07/88
							19.00	12/29/88
							11.00	7/11/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Zinc, filtered	M18	UWQS	5000.00	5.00	PPB	2-W15-15	17.00	9/12/89
							5.00	3/13/90
						2-W15-16	8.00	10/06/88
							6.00	12/29/88
							6.00	9/22/89
							5.00	3/15/90
						2-W15-17	32.00	10/05/88
							15.00	3/12/90
						2-W15-18	63.00	10/06/88
							20.00	12/30/88
							7.00	7/11/89
							10.00	9/25/89
						2-W15-19	54.00	1/15/90
						2-W18-15	6.00	8/17/88
							7.00	12/01/88
						2-W18-21	50.00	10/05/88
							19.00	12/30/88
							12.00	9/12/89
						2-W18-22	99.00	10/05/88
							67.00	12/30/88
							21.00	6/15/89
							17.00	7/31/89
							16.00	9/22/89
							10.00	3/09/90
						2-W18-23	34.00	10/06/88
							11.00	1/03/89
							10.00	7/24/89
							12.00	9/22/89
						2-W18-24	24.00	10/07/88
							11.00	9/25/89
						2-W18-26	101.00	1/15/90
						2-W19-15	53.00	1/12/88
							34.00	4/20/88
							10.00	9/17/88
							14.00	12/15/88
							15.00	4/04/90
						2-W19-2	12.00	4/05/90
						2-W19-20	24.00	1/14/88
							22.00	7/22/88
							22.00	12/02/88
							18.00	10/30/89
							17.00	3/20/90
						2-W19-21	7.00	1/22/88
							6.00	8/19/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Zinc, filtered	M18	UUOS	5000.00	5.00	PPB	2-U19-21	46.00	12/14/88
							7.00	4/04/90
						2-U19-24	140.00	1/14/88
							32.00	8/19/88
							31.00	12/12/88
							73.00	10/30/89
							41.00	3/20/90
						2-U19-27	8.00	11/02/89
							9.00	4/06/90
						2-U19-3	9.00	3/04/88
							30.00	7/28/88
							10.00	12/02/88
							8.00	4/04/90
						2-U22-22	14.00	1/15/88
							5.00	4/05/90
						2-U6-2	24.00	10/07/88
							6.00	1/04/89
							5.00	7/21/89
						2-U7-1	59.00	10/04/88
							10.00	12/29/88
							12.00	7/10/89
						2-U7-2	18.00	10/04/88
							9.00	12/29/88
						2-U7-3	115.00	10/03/88
							22.00	12/29/88
							17.00	3/20/89
							10.00	7/28/89
							24.00	9/15/89
							11.00	1/17/90
							12.00	1/17/90
						2-U7-4	92.00	10/03/88
							13.00	12/29/88
							15.00	12/29/88
							21.00	9/13/89
							11.00	1/19/90
						2-U7-5	74.00	10/03/88
							24.00	12/29/88
							407.00	3/17/89
							10.00	7/25/89
							17.00	9/08/89
							8.00	1/11/90
						2-U7-6	31.00	12/30/88
						2-U7-8	18.00	2/27/90
						2-U8-1	30.00	10/04/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Zinc, filtered	H18	UWQS	5000.00	5.00	PPB	2-U8-1	12.00	12/29/88
							10.00	7/10/89
							12.00	9/12/89
						2-U9-1	13.00	10/07/88
							8.00	12/29/88
							7.00	7/10/89
						6-38-65	7.00	8/25/88
							6.00	2/15/90
						6-38-70	16.00	1/06/88
							12.00	5/11/88
							13.00	1/13/89
							10.00	4/06/90
						6-44-64	6.00	8/26/88
							6.00	1/12/89
						6-49-79	6.00	2/09/88
							27.00	6/07/88
							17.00	8/26/88
							8.00	1/12/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

TABLE B

CHEMICAL CONSTITUENTS DETECTED IN WELLS NEAR SITE 2

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Arsenic, filtered	H37	UWOS	.05	5.00	PPB	2-E34-5	5.00*	9/23/88
							6.00*	3/15/89
							10.00*	7/31/89
							6.00*	9/06/89
							5.00*	3/06/90
						2-E34-6	5.00*	12/28/88
							5.00*	3/16/89
							6.00*	3/07/90
						6-43-42J	9.00*	11/22/88
							8.00*	2/24/89
							10.00*	6/15/89
							7.00*	8/09/89
							8.00*	8/09/89
							14.00*	1/31/90
						6-43-43	7.00*	11/21/88
							7.00*	2/24/89
							8.00*	6/15/89
							9.00*	8/09/89
							8.00*	1/26/90
						6-43-45	9.00*	12/06/89
							12.00*	1/24/90
							11.00*	4/18/90
						6-44-42	12.00*	11/21/88
							12.00*	2/17/89
							13.00*	6/15/89
							8.00*	8/08/89
							15.00*	1/31/90
						6-44-43B	6.00*	12/20/89
							7.00*	1/26/90
							9.00*	1/26/90
							7.00*	4/18/90
						6-45-42	5.00*	1/08/88
							6.00*	6/15/88
						6-49-55A	5.00*	6/15/88
Barium, filtered	H20	UWOS	1000.00	6.00	PPB	2-E34-5	31.00	9/23/88
							27.00	12/28/88
							27.00	3/15/89
							30.00	7/31/89
							27.00	9/06/89
							27.00	3/06/90
						2-E34-6	40.00	9/23/88
							34.00	12/28/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Barium, filtered	H20	UUOS	1000.00	6.00	PPB	2-E34-6	33.00	3/16/89
							38.00	8/01/89
							36.00	9/06/89
							28.00	3/07/90
						2-E35-1	45.00	1/12/90
						6-42-40A	12.00	8/10/89
						6-43-41E	57.00	12/05/89
							54.00	1/25/90
						6-43-41F	50.00	12/05/89
							42.00	1/25/90
							44.00	4/18/90
						6-43-42J	13.00	11/22/88
							12.00	2/24/89
							13.00	6/15/89
							14.00	8/09/89
							17.00	8/09/89
						6-43-43	12.00	11/21/88
							13.00	2/24/89
							13.00	6/15/89
							18.00	8/09/89
							15.00	1/26/90
						6-43-45	38.00	12/06/89
							38.00	1/26/90
							39.00	4/18/90
						6-44-42	12.00	11/21/88
							15.00	2/17/89
							12.00	6/15/89
							17.00	8/08/89
							13.00	1/31/90
						6-44-43B	50.00	12/20/89
							52.00	12/20/89
							49.00	1/26/90
							47.00	4/18/90
						6-45-42	34.00	1/08/88
							35.00	6/15/88
							16.00	8/15/88
							34.00	1/16/89
						6-47-50	74.00	2/08/88
							67.00	6/01/88
						6-49-55A	39.00	2/12/88
							43.00	6/15/88
							45.00	6/15/88
							42.00	9/15/88
							45.00	9/15/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Barium, filtered	H20	WWQS	1000.00	6.00	PPB	6-49-55A	32.00	2/22/89
							33.00	2/22/89
						6-50-53	71.00	3/06/88
							73.00	3/06/88
							77.00	3/06/88
							74.00	6/06/88
							76.00	6/06/88
							76.00	9/15/88
							86.00	9/15/88
							69.00	1/17/89
						6-53-47A	63.00	1/06/88
						6-53-47B	61.00	3/26/90
						6-54-48	16.00	3/26/90
						6-54-49	9.00	4/05/90
						6-55-50C	12.00	3/06/88
							12.00	6/30/88
							9.00	4/06/90
Chloride	C75	WWQS	250000.00	500.00	PPB	2-E34-5	20100.00	9/23/88
							21900.00	12/28/88
							21300.00	3/15/89
							22000.00	7/31/89
							21000.00	9/06/89
							21100.00	3/06/90
						2-E34-6	1030.00	9/23/88
							18200.00	12/28/88
							18100.00	3/16/89
							19000.00	7/31/89
							19000.00	9/06/89
							21300.00	3/07/90
						2-E35-1	16100.00	1/12/90
						6-42-40A	2340.00	1/08/88
							2500.00	11/22/88
							3100.00	2/15/89
							3100.00	5/31/89
							4000.00	8/10/89
							4100.00	1/26/90
						6-43-41E	6600.00	12/05/89
							7100.00	1/25/90
							6600.00	5/15/90
							6700.00	5/15/90
						6-43-41F	6000.00	12/05/89
							7900.00	1/25/90
							6200.00	4/18/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloride	C75	WWQS	250000.00	500.00	PPB	6-43-42J	2800.00	11/22/88
							3000.00	2/24/89
							3500.00	6/15/89
							3400.00	8/09/89
							3100.00	1/31/90
						6-43-43	2900.00	11/21/88
							2900.00	2/24/89
							3200.00	6/15/89
							3200.00	8/09/89
							3300.00	1/26/90
						6-43-45	2500.00	12/06/89
							2900.00	1/26/90
							2700.00	4/18/90
						6-44-42	3100.00	11/21/88
							3300.00	2/17/89
							3300.00	6/15/89
							3100.00	8/08/89
							3200.00	1/31/90
						6-44-43B	4300.00	12/20/89
							4600.00	1/26/90
							4400.00	4/18/90
						6-45-42	5670.00	1/08/88
							5650.00	6/15/88
							4830.00	8/15/88
							5400.00	1/16/89
							5800.00	4/30/90
						6-47-35A	16800.00	4/26/90
						6-47-50	28900.00	2/08/88
							29500.00	6/01/88
						6-47-55A	13900.00	2/12/88
							14100.00	2/12/88
							14200.00	2/12/88
							15200.00	6/15/88
							12300.00	9/15/88
							10700.00	2/22/89
							10800.00	2/22/89
							11300.00	4/27/90
						6-50-45	19900.00	5/03/90
						6-50-48B	29400.00	5/02/90
						6-50-53	35500.00	3/06/88
							37300.00	3/06/88
							38200.00	3/06/88
							33900.00	6/06/88
							36300.00	6/06/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Chloride	C75	WWOS	250000.00	500.00	PPB	6-50-53	36800.00	6/06/88
							31900.00	9/15/88
							35300.00	9/15/88
							34400.00	1/17/89
						6-51-46	20700.00	5/02/90
						6-52-46A	24400.00	5/02/90
						6-52-48	5100.00	5/02/90
						6-53-47A	6190.00	1/06/88
						6-53-47B	18900.00	3/26/90
						6-54-34	8500.00	4/26/90
						6-54-48	41300.00	3/26/90
						6-54-49	7100.00	4/05/90
							7500.00	4/05/90
						6-54-57	12400.00	5/02/90
						6-55-50C	5670.00	3/06/88
							6150.00	6/30/88
							5800.00	4/06/90
Cobalt-60	010	OWS	100.00	22.50	PCI/L	6-49-55A	222.00*	2/12/88
							147.00*	4/15/88
							180.00*	4/15/88
							120.00*	8/04/88
							144.00*	8/04/88
							103.00*	11/14/88
							115.00*	11/14/88
							27.30	4/05/89
							43.40	10/17/89
						6-50-53	352.00*	3/06/88
							460.00*	4/15/88
							469.00*	4/15/88
							455.00*	8/04/88
							496.00*	8/04/88
							504.00*	10/31/88
							516.00*	10/31/88
							532.00*	4/28/89
Cyanide	C70	PRGWTR	52.00	10.00	PPB	6-45-42	151.00*	6/15/88
						6-49-55A	106.00*	2/12/88
							141.00*	2/12/88
							247.00*	2/12/88
							77.00*	6/15/88
							104.00*	6/15/88
							224.00*	9/15/88
							81.50*	3/22/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Cyanide	C70	PRGWTR	52.00	10.00	PPB	6-49-55A	87.60*	2/22/89
							92.30*	2/22/89
							96.20*	2/22/89
							99.80*	2/22/89
							108.00*	2/22/89
							84.90*	4/27/90
						6-50-53	422.00*	3/06/88
							489.00*	3/06/88
							827.00*	3/06/88
							1300.00*	6/06/88
							1360.00*	6/06/88
							1690.00*	6/06/88
							824.00*	9/15/88
							1110.00*	9/15/88
							1540.00*	9/15/88
							430.00*	1/17/89
							483.00*	1/17/89
							574.00*	1/17/89
							633.00*	1/17/89
							641.00*	1/17/89
							717.00*	1/17/89
FLUORIDE	H63	UUOS	4000.00	20.00	PPB	6-45-42	488.00	6/15/88
							550.00	8/15/88
						6-47-50	469.00	2/08/88
							518.00	6/01/88
						6-49-55A	334.00	2/12/88
							337.00	2/12/88
							341.00	2/12/88
							370.00	6/15/88
							402.00	9/15/88
						6-50-53	250.00	3/06/88
							252.00	3/06/88
							257.00	3/06/88
							273.00	6/06/88
							278.00	6/06/88
							279.00	6/06/88
							250.00	9/15/88
							255.00	9/15/88
							256.00	9/15/88
						6-55-50C	184.00	3/06/88
							187.00	6/30/88
Gross alpha	212	UUOS	15.00	4.00	PCI/L	6-50-53	4.49	3/06/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross alpha	212	UUOS	15.00	4.00	PCI/L	6-50-53	4.85	3/06/88
							4.97	6/06/88
							8.05	6/06/88
							5.23	9/15/88
							5.98	9/15/88
							4.02	10/31/88
						6-53-47B	4.02	1/31/89
						6-53-48A	9.49	1/07/88
						6-55-50D	4.75	2/23/89
Gross beta	111	UUOS	50.00	8.00	PCI/L	2-E34-5	8.27	9/23/88
							8.28	7/31/89
							8.59	9/06/89
						2-E34-6	14.70	9/23/88
							18.00	7/31/89
							8.11	9/06/89
						6-42-40A	12.70	8/10/89
						6-43-41F	10.20	12/05/89
						6-43-42J	8.01	11/22/88
						6-43-43	11.90	8/09/89
						6-47-50	11.60	6/01/88
						6-49-55A	1360.00*	2/12/88
							1550.00*	2/12/88
							1220.00*	4/15/88
							1360.00*	6/15/88
							944.00*	8/04/88
							1070.00*	8/04/88
							841.00*	11/14/88
							858.00*	11/14/88
							317.00*	4/05/89
							278.00*	10/17/89
						6-50-42	8.27	4/19/88
						6-50-45	8.92	5/03/90
						6-50-48B	13.50	3/08/88
							11.10	7/15/88
							13.20	4/19/89
							11.00	10/20/89
							11.20	5/02/90
						6-50-53	2350.00*	3/06/88
							2430.00*	3/06/88
							2560.00*	3/06/88
							2570.00*	3/06/88
							2030.00*	4/15/88
							2260.00*	4/15/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross beta	111	WWDS	50.00	8.00	PCI/L	6-50-53	2630.00*	6/06/88
							2980.00*	6/06/88
							3020.00*	6/06/88
							1350.00*	8/04/88
							2300.00*	8/04/88
							3030.00*	9/15/88
							3220.00*	9/15/88
							2590.00*	10/31/88
							2760.00*	10/31/88
							1440.00*	4/28/89
						6-51-46	8.55	3/06/88
							11.80	5/03/88
							8.33	7/15/88
							9.93	4/21/89
							73.10*	5/02/90
						6-52-46A	9.10	3/06/88
							9.52	7/15/88
							8.92	4/21/89
							9.42	10/23/89
							9.79	5/02/90
						6-52-48	10.90	11/14/88
							21.80	5/02/90
						6-53-47A	137.00*	1/07/88
							105.00*	2/03/88
							92.70*	3/17/88
							68.30*	4/07/88
							100.00*	5/04/88
							109.00*	6/06/88
							138.00*	7/19/88
							142.00*	8/12/88
							122.00*	9/09/88
							98.90*	10/06/88
							129.00*	11/04/88
							115.00*	1/05/89
							116.00*	1/13/89
							94.90*	2/08/89
							147.00*	10/09/89
						6-53-47B	151.00*	1/07/88
							162.00*	5/23/88
							186.00*	7/15/88
							196.00*	11/14/88
							188.00*	1/31/89
							196.00*	4/19/89
							300.00*	3/26/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Gross beta	111	UWQS	50.00	8.00	PCI/L	6-53-48A	33.20	1/07/88
							29.30	5/23/88
							49.40	7/15/88
							149.00*	11/14/88
							197.00*	1/31/89
							209.00*	4/19/89
						6-53-48B	475.00*	1/07/88
							857.00*	5/23/88
							611.00*	7/15/88
							447.00*	11/14/88
							503.00*	2/01/89
							452.00*	4/19/89
						6-53-55A	9.06	1/08/88
							10.20	9/21/88
							9.18	8/31/89
						6-54-45A	8.77	2/19/88
							16.70	10/23/89
						6-54-48	106.00*	1/08/88
							93.60*	5/25/88
							101.00*	7/22/88
							81.30*	11/15/88
							67.80*	1/31/89
							82.20*	4/25/89
							83.50*	3/26/90
						6-54-49	59.60*	1/08/88
							54.10*	5/25/88
							59.10*	7/15/88
							42.60	11/15/88
							30.20	1/31/89
							27.00	4/12/89
							57.10*	4/05/90
							58.10*	4/05/90
						6-54-57	21.40	2/19/88
							9.40	4/12/89
							8.00	10/23/89
							11.50	5/02/90
						6-55-50A	41.50	6/10/88
							46.70	7/15/88
							44.60	11/14/88
							30.40	4/12/89
							38.50	10/23/89
						6-55-50C	9.22	2/23/89
						6-55-500	49.20	3/06/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Manganese, filtered	M29	WWOS	50.00	5.00	PPB	2-E34-5	7.00	12/28/88
							5.00	7/31/89
						2-E34-6	79.00*	9/23/88
							49.00	12/28/88
							32.00	3/16/89
							15.00	8/01/89
							19.00	9/06/89
							5.00	3/07/90
						2-E35-1	60.00*	1/12/90
						6-42-40A	11.00	1/08/88
							5.00	2/15/89
							5.00	5/31/89
							8.00	8/10/89
							7.00	1/26/90
						6-43-41E	33.00	12/05/89
							16.00	1/25/90
						6-43-41F	216.00*	12/05/89
							79.00*	1/25/90
							89.00*	4/18/90
						6-43-42J	5.00	2/24/89
							5.00	6/15/89
							5.00	8/09/89
						6-43-43	5.00	6/15/89
						6-44-43B	7.00	12/20/89
						6-45-42	10.00	1/08/88
							7.00	6/15/88
						6-47-50	14.00	2/08/88
							12.00	6/01/88
						6-49-55A	25.00	2/12/88
							20.00	6/15/88
							21.00	6/15/88
							32.00	9/15/88
							33.00	9/15/88
							28.00	2/22/89
							29.00	2/22/89
						6-53-47A	77.00*	1/06/88
						6-53-47B	6.00	3/26/90
Nitrate	C72	WWOS	45000.00	500.00	PPB	2-E34-5	14800.00	9/23/88
							14300.00	12/28/88
							13600.00	3/15/89
							13400.00	7/31/89
							13200.00	9/06/89
							13900.00	3/06/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate	C72	UUQS	45000.00	500.00	PPB	2-E34-6	6600.00	12/28/88
							6400.00	3/16/89
							6400.00	7/31/89
							6500.00	9/06/89
							13700.00	3/07/90
						2-E35-1	10200.00	1/12/90
						6-42-40A	700.00	11/22/88
							600.00	2/15/89
							700.00	5/31/89
							6500.00	8/10/89
							800.00	1/26/90
						6-43-41E	9300.00	12/05/89
							8700.00	1/25/90
							10100.00	5/15/90
							10400.00	5/15/90
						6-43-41F	9500.00	12/05/89
							10200.00	1/25/90
							11700.00	4/18/90
						6-43-42J	1000.00	11/22/88
							1800.00	2/24/89
							1800.00	6/15/89
							1400.00	8/09/89
							5100.00	1/31/90
						6-43-43	800.00	11/21/88
							700.00	2/24/89
							1100.00	6/15/89
							1100.00	8/09/89
							1000.00	1/26/90
						6-43-45	1000.00	12/06/89
							1200.00	1/26/90
							1500.00	4/18/90
						6-44-42	1100.00	11/21/88
							1400.00	2/17/89
							1300.00	6/15/89
							1500.00	8/08/89
							1400.00	1/31/90
						6-44-43B	7000.00	12/20/89
							7200.00	12/20/89
							7600.00	1/26/90
							8300.00	1/26/90
							6600.00	4/18/90
						6-45-42	8860.00	1/08/88
							7270.00	6/15/88
							6650.00	8/15/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Nitrate	C72	UWQS	45000.00	500.00	PPB	6-45-42	6900.00	1/16/89
							5400.00	4/30/90
						6-47-35A	14400.00	4/26/90
						6-47-50	7470.00	2/08/88
							8120.00	6/01/88
						6-49-55A	229000.00*	2/12/88
							231000.00*	2/12/88
							233000.00*	2/12/88
							209000.00*	6/15/88
							170000.00*	9/15/88
							94400.00*	2/22/89
							94700.00*	2/22/89
							16100.00	4/27/90
						6-50-53	509000.00*	3/06/88
							533000.00*	3/06/88
							538000.00*	3/06/88
							554000.00*	6/06/88
							557000.00*	6/06/88
							559000.00*	6/06/88
							566000.00*	9/15/88
							572000.00*	9/15/88
							593000.00*	9/15/88
							625000.00*	1/17/89
						6-52-46A	7800.00	5/02/90
						6-53-47A	5690.00	1/06/88
						6-53-47B	30600.00	3/26/90
						6-54-34	8100.00	4/26/90
						6-54-48	49200.00*	3/26/90
						6-54-49	4900.00	4/05/90
							5000.00	4/05/90
						6-55-50C	1540.00	3/06/88
							1530.00	6/30/88
							1900.00	4/06/90
Strontium-90	121	UWQS	8.00	5.00	PCI/L	6-53-47A	77.10*	1/07/88
							46.50*	2/03/88
							59.60*	3/17/88
							38.70*	4/07/88
							52.10*	5/04/88
							42.50*	6/06/88
							61.50*	7/19/88
							67.40*	8/12/88
							61.40*	9/09/88
							64.40*	10/06/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Strontium-90	121	UWQS	8.00	5.00	PCI/L	6-53-47A	55.80*	11/04/88
							58.50*	1/05/89
							57.70*	1/13/89
							69.40*	2/08/89
							63.70*	10/09/89
						6-53-47B	85.50*	1/07/88
							88.60*	5/23/88
							93.30*	7/15/88
							99.70*	11/14/88
							106.00*	1/31/89
							116.00*	4/19/89
							113.00*	3/26/90
						6-53-48A	10.10*	1/07/88
							14.80*	5/23/88
							21.70*	7/15/88
							54.40*	11/14/88
							108.00*	1/31/89
							124.00*	4/19/89
						6-53-48B	276.00*	1/07/88
							477.00*	5/23/88
							344.00*	7/15/88
							366.00*	11/14/88
							301.00*	2/01/89
							240.00*	4/19/89
						6-54-48	51.00*	1/08/88
							48.00*	5/25/88
							29.30*	7/22/88
							43.20*	11/15/88
							38.20*	1/31/89
							42.60*	4/25/89
							126.00*	3/26/90
						6-54-49	26.10*	1/09/88
							27.40*	5/25/88
							24.00*	7/15/88
							19.30*	11/15/88
							10.40*	1/31/89
							11.40*	4/12/89
							30.10*	4/05/90
							30.80*	4/05/90
Sulfate	C73	UWQS	250000.00	500.00	PPB	2-E34-5	109000.00	9/23/88
							105000.00	12/28/88
							108000.00	3/15/89
							107000.00	7/31/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	WQOS	250000.00	500.00	PPB	2-E34-5	105000.00	9/06/89
							107000.00	3/06/90
						2-E34-6	5170.00	9/23/88
							79700.00	12/28/88
							81600.00	3/16/89
							81000.00	7/31/89
							80000.00	9/06/89
							107000.00	3/07/90
						2-E35-1	85900.00	1/12/90
						6-42-40A	11500.00	1/08/88
							12200.00	11/22/88
							13500.00	2/15/89
							13700.00	5/31/89
							19100.00	8/10/89
							13200.00	1/26/90
						6-43-41E	33500.00	12/05/89
							35400.00	1/25/90
							29300.00	5/15/90
							30000.00	5/15/90
						6-43-41F	25800.00	12/05/89
							26500.00	1/25/90
							26000.00	4/18/90
						6-43-42J	11300.00	11/22/88
							12600.00	2/24/89
							13900.00	6/15/89
							12800.00	8/09/89
							20300.00	1/31/90
						6-43-43	9300.00	11/21/88
							11000.00	2/24/89
							12100.00	6/15/89
							10600.00	8/09/89
							10400.00	1/26/90
						6-43-45	14500.00	12/06/89
							14900.00	1/26/90
							14300.00	4/18/90
						6-44-42	12000.00	11/21/88
							14000.00	2/17/89
							15700.00	6/15/89
							12700.00	8/08/89
							12100.00	1/31/90
						6-44-43B	29600.00	12/20/89
							29700.00	12/20/89
							35500.00	1/26/90
							35700.00	1/26/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Sulfate	C73	UWOS	250000.00	500.00	PPB	6-44-43B	26500.00	4/18/90
						6-45-42	35200.00	1/08/88
							34200.00	6/15/88
							30900.00	8/15/88
							36000.00	1/16/89
							30000.00	4/30/90
						6-47-35A	34400.00	4/26/90
						6-47-50	95100.00	2/08/88
							98200.00	6/01/88
						6-49-55A	142000.00	2/12/88
							143000.00	2/12/88
							144000.00	2/12/88
							142000.00	6/15/88
							138000.00	9/15/88
							112000.00	2/22/89
							106000.00	4/27/90
						6-50-45	19600.00	5/03/90
						6-50-48B	8600.00	5/02/90
						6-50-53	405000.00*	3/06/88
							426000.00*	3/06/88
							434000.00*	3/06/88
							393000.00*	6/06/88
							394000.00*	6/06/88
							396000.00*	6/06/88
							386000.00*	9/15/88
							390000.00*	9/15/88
							408000.00*	9/15/88
							401000.00*	1/17/89
						6-51-46	10600.00	5/02/90
						6-52-46A	12900.00	5/02/90
						6-52-48	27900.00	5/02/90
						6-53-47A	42100.00	1/06/88
						6-53-47B	55200.00	3/26/90
						6-54-34	19600.00	4/26/90
						6-54-48	83500.00	3/26/90
						6-54-49	9000.00	4/05/90
							9100.00	4/05/90
						6-54-57	15500.00	5/02/90
						6-55-50C	16700.00	3/06/88
							15600.00	6/30/88
							15300.00	4/06/90
Technetium-99	197	DWS	900.00	15.00	PCI/L	6-49-55A	12500.00*	2/12/88
							8750.00*	8/04/88

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Technetium-99	197	DWS	900.00	15.00	PCI/L	6-49-55A	3190.00*	3/24/89
						6-49-55B	48.00	7/20/88
						6-50-48B	16.50	3/06/88
						6-50-53	26500.00*	3/06/88
							28000.00*	4/15/88
							28400.00*	8/04/88
							32700.00*	10/31/88
							391.00	3/27/89
						6-54-57	71.70	2/19/88
							23.30	7/19/88
Tritium	108	UWOS	20000.00	500.00	PCI/L	2-E34-5	617.00	9/23/88
						2-E35-1	654.00	1/12/90
						6-43-41E	95400.00*	12/05/89
						6-43-41F	58500.00*	4/18/90
						6-43-42J	1200.00	11/22/88
							2620.00	2/24/89
							1790.00	6/15/89
							1080.00	8/09/89
							1160.00	8/09/89
							13000.00	1/31/90
						6-43-43	539.00	11/21/88
						6-43-45	506.00	4/18/90
						6-44-42	963.00	11/21/88
							1140.00	2/17/89
							1040.00	1/31/90
						6-44-43B	40100.00*	12/20/89
							41400.00*	12/20/89
							44000.00*	1/26/90
							45000.00*	1/26/90
							37300.00*	4/18/90
						6-45-42	52300.00*	1/08/88
							50100.00*	2/04/88
							49700.00*	3/17/88
							50200.00*	4/07/88
							49400.00*	5/04/88
							50200.00*	6/06/88
							46000.00*	8/12/88
							45600.00*	8/15/88
							47100.00*	9/09/88
							49500.00*	10/06/88
							46300.00*	10/31/88
							48000.00*	12/13/88
							44500.00*	1/13/89

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS

CONSTITUENT	CODE	REG TYPE	REG LIMIT	DETECTION LIMITS	UNITS	WELL	RESULT	DATE
Tritium	108	UWOS	20000.00	500.00	PCI/L	6-45-42	42500.00*	2/08/89
							39100.00*	3/02/89
							41400.00*	10/09/89
							40300.00*	4/30/90
						6-49-55A	14800.00	2/12/88
							13700.00	4/15/88
							14100.00	4/15/88
							11500.00	8/04/88
							11800.00	8/04/88
							7950.00	11/14/88
							8750.00	11/14/88
							3620.00	4/05/89
							2910.00	10/17/89
							2530.00	4/27/90
						6-50-42	4250.00	2/02/88
							4410.00	4/19/88
							4390.00	7/15/88
							2490.00	10/31/88
							4010.00	4/05/89
							4540.00	10/19/89
						6-50-53	3070.00	3/06/88
							3270.00	4/15/88
							3410.00	4/15/88
							3730.00	8/04/88
							3950.00	8/04/88
							4290.00	10/31/88
							5040.00	10/31/88
							4350.00	4/28/89
						6-52-46A	3010.00	3/06/88
						6-54-34	792.00	11/14/88
						6-55-40	962.00	2/10/88
						6-55-50A	552.00	11/14/88
Zinc, filtered	H18	UWOS	5000.00	5.00	PPB	2-E34-5	22.00	9/23/88
							13.00	12/28/88
							8.00	3/15/89
							354.00	7/31/89
							5.00	9/06/89
							8.00	3/06/90
						2-E34-6	5.00	9/23/88
							8.00	3/07/90
						6-42-40A	7.00	2/15/89
						6-43-41E	14.00	12/05/89
							12.00	1/25/90

* INDICATES RESULTS THAT EXCEED REGULATORY LIMITS